CURRICULUM VITA

November 15, 2023

DR. CARL K. CHANG, PH.D.

PROFESSOR EMERITUS
(Retired on June 30, 2022)
DEPARTMENT OF COMPUTER SCIENCE

IOWA STATE UNIVERSITY

chang@iastate.edu
http://www.cs.iastate.edu/~chang

EXECUTIVE SUMMARY

Highlights of Administrative Contributions: Chang served as department chair for eleven years from 2002-2013 in the department of computer science at Iowa State University. During his terms as the chair he promoted two full professors, twelve associate professors, four senior lecturers, and cultivated six NSF CAREER awardees. The department continued to grow in faculty size and strength, and heavily engaged in interdisciplinary research. The joint Software Engineering degree program between Computer Science and Computer Engineering is also completed during his tenure as the chair. Today, Computer Science at ISU has visibly moved up in its national ranking in several areas including software eC and significantly improved its academic reputation with a globally recognized faculty.

Undergraduate Education: Chang spearheaded the joint task force on Computing Curricula 2001 (CC2001) for education renovation in a global setting, an effort of the IEEE Computer Society (IEEE-CS) and the Association for Computing Machinery (ACM). CC2001 has had a major impact on undergraduate computing education worldwide. He is highly experienced with accreditation, articulation, and certification matters in higher education and the computing profession. Since he joined Iowa State, Chang led the Computer Science Department to have developed a joint software engineering undergraduate degree program with computer engineering faculty. He led the department in several rounds to have earned or renewed accreditations of both computer science and software engineering programs by ABET. He also contributed to education renovation through initiating the interdisciplinary Gerontechnology Program at ISU, partially funded by the National Science Foundation, to train technologists in support of the national agenda on successful aging.

Graduate Education: Chang is a popular academic advisor and has attracted many graduate students to work in his research group to study the latest software technologies and engage in hands-on projects. Since he began his academic career at the University of Illinois in 1984, he has produced 40 Ph.D. dissertations, 33 M.S. theses, and 150+ M.S. projects. At ISU, he rejuvenized the department to expand the Ph.D. program from 30 to 100 Ph.D. students at peak during his tenure as the chair.

Research and Grants: His current research interests include software architecture, requirements engineering, services computing and successful aging. He has published extensively in these areas in journals and refereed conferences, and various column articles and editor's messages. In the past 30 years, he has attracted numerous external grants from federal funding agencies and industry sources to support his research. To date, 23 visiting scholars from foreign countries have been hosted for joint research in Chang's labs.

Professional Services: Chang has been an active volunteer leader in the IEEE Computer Society for almost three decades, the largest and oldest computer association in the world. He was elected 2004 President of the society. Before that, he served as the First Vice President (2001) to lead the Educational Activities Board. He served as Editor-in-Chief (EIC) of *IEEE Software* from 1991-94, and in that capacity established a legendary Industrial Advisory Board. He organized the 1997 President's Roundtable to develop a technology roadmap for IEEE-CS. As a recognized scholar in software engineering, he is among the initial team that developed the Software Engineering Body of Knowledge (SWEBOK). He co-founded the IEEE International Conference on Requirements Engineering (ICRE), and the Symposium on Applications and the Internet (SAINT) co-sponsored by the IEEE-CS

and Information Processing Society of Japan (IPSJ). He served from 2006-2015 as the chair of the standing committee of the IEEE International Computer Software and Applications Conference (COMPSAC), the IEEE signature conference on computer software technology for computer and software professionals. From 2007-2010, he served as the Editor-in-Chief of *IEEE Computer*, the flagship publication for the IEEE Computer Society. In that capacity, he spearheaded a Society-wide initiative and established another Industrial Advisory Board for the entire Society, which is a premier industrial forum with global expertise and networks. He was recently elected an Officer of the Computational and Information Sciences Division, Scientific Committee, European Academy of Sciences, for a 3-year term (2017-2019. From June 2017 through July 2022, he served as the Chair of the Steering Committee for IEEE World Congress on Services (a.k.a. IEEE SERVICES) which is an umbrella of several top-tier co-located IEEE conferences including IEEE Web Services and IEEE CLOUD.

Awards, Medals, and Honors: As an IEEE Fellow, he received the Computer Society's Outstanding Contribution Award, Meritorious Service Award, and the Golden Core Award, in addition to the IEEE Third Millennium Medal. He finished a 3-year term (2000-02) as a Distinguished Visitor for IEEE-CS. In 2004 he was elected Fellow of the American Association for the Advancement of Science (AAAS). In 2006, he received the prestigious Marin Drinov Medal from the Bulgarian Academy of Sciences. Through a globally competitive selection program, he received prestigious IBM Faculty Awards in 2006, 2007, and 2009. He is the recipient of the 2012 IEEE Richard E. Merwin Medal for his contributions and leadership in the computing profession. In 2014, he was selected as the 2014 Distinguished Alumnus for his alma mater, National Central University in Taiwan, and as recipient of the 2014 Overseas Outstanding Contributions Award by the China Computer Federation (CCF), the largest professional association in China, selected from the pool of internationally recognized computer scientists of Chinese origin outside China. He received the Honorary Member Award from the Information Processing Society of Japan (IPSJ) on June 5, 2019 in Tokyo, becoming the 8th foreign awardee in IPSJ's long history since 1960. Most recently, the Steering Committee of IEEE SERVICES presented a special award in recognition of his Research Excellence and Leadership (the REAL Award) in the opening plenary session at the 2023 IEEE SERVICES, Chicago, on July 3.

Carl K. Chang
Professor Emeritus
Department of Computer Science
Iowa State University

A. Contact Information

Department of Computer Science
226 Atanasoff Hall
Iowa State University
E-Mail: chang@iastate.edu or c.chang@computer.org
URL: www.cs.iastate.edu/~chang

B. Education and Experience

Ph.D. in Computer Science	Northwestern University	1982
M.S. in Computer Science	Northern Illinois University	1978
B.S. in Mathematics	National Central University	1974

Professor Emeritus, Department of Computer Science, Iowa State University (July 1, 2022-)
Professor, Human Computer Interaction (August 2004-June 2022)
Professor, Gerontology (2009-2022)
Professor and Director, Software Engineering Laboratory (August 2002-June 2022)
Professor and Chair, Department of Computer Science, Iowa State University (July 1, 2002-June 30, 2013)
Professor and Director, Center for IMPACT, Auburn University (August 2001-May 2002)
Associate Professor, University of Illinois at Chicago, (August 1990-August 2002*)
Assistant Professor, University of Illinois at Chicago, (August 1984-August 1990)
Member of Technical Staff – Bell Laboratories (June 1982-June 1984)
Research Assistant – Northwestern University (June 1980-May 1982)
Teaching Assistant – Northwestern University (September 1979-May 1980)
Systems Programmer – GTE Automatic Electric (June 1978-May 1979)
Teaching Assistant – Northern Illinois University (August 1977-May 1978)
* Leave of Absence from UIC to Auburn between August 2001-May 2002

C. Honorary Society Memberships, Awards and Courtesy Appointments

Research Excellence and Leadership Award (the REAL Award) - a special award presented by the Steering Committee of the IEEE World Congress on Services (IEEE SERVICES) at the 2023 IEEE SERVICES, Chicago, July 3, 2023.

Career Recognition Award, "from your colleagues and students, whose lives and careers have been supported and strengthened by yours", Technical Committee on Services Computing,
IEEE Computer Society, July 2, 2023.

Honorary Member Award, Information Processing Society of Japan (IPSJ), June 5, 2019 in Tokyo. (8th foreign awardee in IPSJ's history since 1960.) See:

https://www.ipsj.or.jp/english/organization/aboutipsj/honorary.html

Officer of the Computational and Information Sciences Division, Scientific Committee, European Academy of Sciences: first 3-year term (2017-2019), second 3-year term (2019-2022). See:

https://www.eurasc.eu/divisions/computational-and-information-sciences-division

2014 Outstanding Alumnus Award, National Central University, Taiwan, May 24, 2014.

2014 Overseas Outstanding Contributions Award, China Computer Federation (CCF), October 24, 2014.

IEEE Richard E. Merwin Medal, "for outstanding contributions and exemplary leadership and service to the IEEE Computer Society and the computing profession", 2012.

Meritorious Service Award, "In recognition for outstanding service as IEEE Computer Editor-in-Chief – 2007 to. 2010", IEEE Computer Society, 2011.

IBM Faculty Award, "…recognizes the quality of Chang's program and its importance to the computer industry." 2006, 2007, 2009.

Marin Drinov Medal, "for his great scientific achievements in the field of software technologies and for his contributions to the scientific cooperation between American and Bulgarian scientists in the field of computer technologies." Bulgarian Academy of Sciences, Sofia, Bulgaria, 2006.

Best Paper Award, "An Empirical Performance Study for Validating a Performance Analysis Approach: PSIM", 2005 IEEE Computer Software and Applications Conference (COMPSAC 2005), 25-28 July 2005, Edinburgh, Scotland, UK.

AAAS Fellow, "For excellence in computer science and software engineering research, for distinguished contributions to the development of modern computer science curricula, and for exemplifying leadership in serving professional societies in the world of computing", American Association for the Advancement of Science, 2004.

Best Research Paper. "Automating speculative queries through event-based requirements traceability", 2002 IEEE Joint Int'l Conference on Requirements Engineering (RE'02), 9-13th September 2002, Essen, Germany.

Member, European Academy of Sciences http://www.eurasc.eu, 2002.

Meritorious Service Award, "For strong Leadership and unswerving dedication to the Society above and beyond the normal call of duty in the year 2000", IEEE Computer Society, November 1, 2001.

IEEE Fellow, "For seamless integration of Petri-net oriented techniques to support project management", 2001.

Distinguished Visitor, IEEE Computer Society, 2000-2002.

IEEE Third Millennium Medal, "In recognition of his research contributions in the areas of software and software development", 2000.

Golden Core Award, IEEE Computer Society, 1996.

Outstanding Contribution Award, ``For outstanding accomplishments to re-vitalize IEEE Software magazine by establishing an active Industrial Advisory Board and an invigorating Editorial Board to cooperate amicably and effectively", IEEE Computer Society, September 22, 1995.

Outstanding Leadership Award, ``In recognition of his outstanding leadership as the President of CAPAMA 1993-94 and the Conference Chair at ICAST 94", Chinese Academic and Professional Association in Mid-America, June 24, 1995.

Certificate of Appreciation, ``For outstanding service and exemplary performance as IEEE Software Editor-in-Chief (1991-94)", IEEE Software Editorial Board and IEEE Software Industrial Advisory Board.

(Also received numerous times the IEEE Computer Society Certificate of Appreciation in the past two decades.)

Member, Sigma Xi.

Member Upsilon Pi Epsilon.

D. Contribution to Teaching and Curriculum Development

Developed a new course COM S 665B "Advanced Topics in Software Engineering: Empirical", offered first time in fall 2017.

Renovated COM S 410/510 "Distributed Software Development" to teach the first software engineering course based on the prevalent industrial-strength Agile Methods in the department, fall 2015.

Initiated COM S/Geron 414/514 on Gerontechnology for Smart Homes; stabilized the course since 2011.

Initiated the Certificate in Computing Applications at ISU, in cooperation with College of Engineering, College of Business. (Approved)

Initiated the Computing Games Curriculum and established the first high-end Computer Graphics Lab at ISU.

Initiated the Gerontechnology Program at ISU, in cooperation with the Gerontology faculty; funded by the NSF CPATH I program, 2009-2012

Led the department to have developed a joint software engineering degree program between College of Liberal Arts and Sciences and College of Engineering. (Approved)

Led the department to have developed a joint BCBio degree program with bioscience faculty. (Approved)

Engaged ISU Continuing Education to offer Com S 103 to off-campus students. This is before ISU's online courses became a norm and structured into the XW/XV courses.

Initiated online course Com S 103 [Computer Literacy and Applications] that grew to > 1,000 students per semester at one time.

Initiated the course Com S 409/509 [Requirements Engineering] at ISU, and co-taught it in 2002.

Represented UIC on the Computer Science Panel of the Illinois Articulation Initiative, IBHE.

Representing IEEE and co-chaired with Peter Denning of ACM for the Computing Curricula 2001 Joint Task Force, IEEE-CS and ACM (1999-2001).

Developed video course EECS 571 (Software Engineering Environments) at UIC.

Developed video course EECS 570 (Advanced Topics in Software Engineering) at UIC.

See Appendix D-1 for teaching record.

E. Graduate Students Supervised and Supported

See Appendix E-1 for details.

At UIC, I produced 19 PhD theses, 17 MS theses, and 200+ MS projects.

At ISU, I produced 21 PhD dissertations and 15 MS theses.

F. Visiting Scholars and Postdocs

1. Keijiro Araki, Associate Professor, Department of Computer Science and Communication Engineering, Kyushu University, Fukuoka, JAPAN. Dr. Araki studied programming tools and environments during his one-month visit in May-June, 1985. (Chair Professor at KU; retired)

2. Tao Xu, Teacher for Advanced Programming Languages, Economic Information Department, Hubei Institute of Finance and Economics, Wuhan, PRC. Ms. Xu studied incremental programming environments. She stayed in this laboratory from September 86-June 87.

3. Mikio Aoyoma, Senior Engineer, Telecommunications Software Division, Fujitsu Limited, Japan. Dr. Aoyama studied distributed software testing and knowledge engineering. He stayed with this laboratory from October 1986 for two years. (Professor at Niigata Institute of Technology; deceased)

4. Tsuneki Haizuka, Senior Engineer, Telecommunications Software Division, Fujitsu Limited, Japan. He succeeded Mr. Aoyama to be the second visiting scholar sent from Fujitsu. He stayed with UIC for one month in December 1988 and studied Distributed Software Diagnosis.

5. Takashi Arano, Senior Engineer, Software Laboratories, NTT, Japan. Mr. Arano studied Object-Oriented Software Paradigm for one year from October 1991 to September 1992.

6. Kazuoki Osada, Professor, Dept. of Electrical Engineering, Kinki University, Japan. Professor Osada studied Object-Oriented Software Design for one year from Aug. 1993 to Sept. 1994. (retired)

7. Yiming Chen, Associate Professor, Department of Information Management, National Central University, Taiwan. Professor Chen studied E-Commerce and its security issues. From September 1998 to August 1999. (Dean of College of Business)

8. Qingsheng Zhu, Dean of College of Computing, Chongqing University, Professor Zhu studied multimedia data compression and transmission in the Internetworking environment from September 2001 to March 2002.

9. Meihua Pan, Research Fellow, China Aero-Polytechnology Establishment. Ms. Pan arrived at ISU in August 2007 and studied risk management. Dr. Robyn Lutz was a co-host.

10. Katsunori Oyama, Research Scientist, Nihon University. Dr. Oyama arrived at ISU in October 2007 and is studying mind networks and sensor networks; stayed at ISU for 3 years. (Associate Professor, Nihon University).

11. Dong Li, Visiting Scholar, Research Division, Ministry of Public Safety, China. Mr. Li arrived at ISU in October 2008 for one-year stay, and studied software product line engineering.

12. Fred Cheng, Visiting Scholar, studied data communication security; as a result of this study Fred published a paper on "A Novel Rubbing Encryption Algorithm and The Implementation of a Web Based OTP Token", in the IEEE COMPSAC conference which only accepted 20% regular papers from the 193 submissions in 2010.

13. Heung-Seok Chae, Visiting Scholar, Pusan National University, Korea. Dr. Chae arrived at ISU in July 2010 for a one-year stay and studied software testing and software metrics.

14. Bin Xu, Visiting Scholar, Zhejiang Gong-Shang University, China. Dr. Xu arrived at ISU in September 2010 for a half-year stay and studied collaborative software evolution and smart home technologies.

15. Yanping Chen, Visiting Scholar, Xian University of Post and Telecommunications, China. Dr. Chen arrived at ISU on 8/19/2013 a one-year stay. She studied semantic web, software evolution and page ranking techniques.

16. Yan Gao, Visiting Scholar, Northeastern University, China. Dr. Gao arrived at ISU on 8/18/2013 for a one-year stay, and studied software evolution under Professor Chang's *Situ* framework.

16. Chunlai Chai, Visiting Scholar, Zhejiang Gongshang University, China. From September, 2013-August 2014. He studied location-based services under Professor Chang's *Situ* framework.

17. Zhiyong Zhang, Visiting Scholar, Henan University of Science and Technology, China. From April, 2015-April 2016. He studied multimedia social networks and services computing.

18. Masanori Kumagai, Visiting Scholar, Nihon University, Japan. From April, 2016-February 2017. He studied network protocols.

19. Hon-Hang (Sica) Chang, Visiting Scholar, National Central University, Taiwan. From March 7, 2017 – May 14. He studied multimedia computing.

20. Jiaxuan Wu, Visiting Scholar, Northeastern University, Shenyang, China. Arrived at ISU on October 27, 2017. He studied big data platform and analytics.

21. Changsheng Zhang, Visiting Scholar, Northeastern University, Shenyang, China. Arrived ISU on September 8, 2018.

22. Anxiang Ma, Visiting Scholar, Northeastern University, Shenyang, China. Arrived at ISU on September 8, 2018.

23. Sheng-zhi Huang, Visiting Scholar, National Central University, Taiwan. Arrived at ISU on March 22, 2022. He is studying Joint Optimization of Service Time and Energy Cost on MEC Servers for Task Offloading in Mobile Networks.

G. Grant Activities

In my academic career, I have attracted significant external funding to support my research, in addition to equipment donations from AT&T, etc. See Appendix G-1 for grant history.

H. Publications

H-1. *Refereed Journal Papers, Invited Keynote Papers, Books and Book Chapters, Editorial of Proceedings (23 to date) - References Google Scholar & DBLP*

1. C. K. Chang and T. M. Jiang, ``A Binary Single-Key-Lock System for Access Control'', IEEE Transactions on Computers, Oct. 1989, pp.1462-1466.

2. C. K. Chang and M. Aoyama, ``Software in the Far East'', IEEE Software, March 1989, pp.10-12.

3. C. K. Chang, Y. F. Chang, Y. Lin, C. R. Chou and J. J. Chen, "Modeling a Real-Time Multitasking System in a Timed PQ Net'', IEEE Software, March 1989, pp. 46-51.

4. C. K. Chang and L. F. Wong, ``Design of Monitoring System for Distributed Applications'', Information and Software Technology, July 1989, pp. 295-304.

5. C. K. Chang, M. Aoyama and Y. F. Chang, ``A Real-time Distributed Simulation of PBX with Software Reuse'', Simulation, Feb. 1990, pp. 71-79.

6. C. K. Chang, C. C. Song, Y. F. Chang and M. Aoyama, ``INTEGRAL - A Petri Net Approach to Distributed Software Development'', Information and Software Technology, December 1989, pp. 535-545.

7. C. K. Chang and G. Trubow, ``Joint Software Research Between Industry and Academia'', IEEE Software, Nov. 1990, pp. 71-77.

8. C. K. Chang and Yahya Al-Salqan, ``Performance Study of CSMA/CD with Connected Direct Data Link - Simulation Study'', Int'l Journal in Computer Simulation, Vol. 4, No. 3, 1994, pp. 343-371.

9. Mikio Aoyama and C. K. Chang, ``A Petri Net Based Platform for Developing Communications Software Systems'', IEICE (The Institute of Electronics, Information and Communication Engineers) Trans. on Fundamentals, Vol. E75-A, No. 10, Oct. 1992, pp. 1384-1359.

10. Yahya Al-Salqan and Carl K. Chang,``MediaWare: A Distributed Multimedia Environment with Interoperability.'' Computers in Industry, Vol. 29, No. 1-2, July 1996, pp. 71-78, Elsevier Science B.V., Netherlands, 1995.

11. Yahya Al-Salqan and Carl K. Chang,``MediaWare : On Distributed Multimedia Temporal Relations and Synchronization Agents.'' IEEE Multimedia, June 1996, pp. 30-39.

12. Carl K. Chang and Chiao-Chuan Shih, ``Challenges and Trends of Multimedia Services'', 1994-1995 Annual Review of Communications, National Engineering Consortium, 1995, pp. 683-686.

13. Takashi Arano, Carl K. Chang, Hiroshi Aono and Tomohiro Fujisaki, ``An Object-Oriented Simulation Technique in Software Prototyping'', to be published in Society of Computer Simulation.

14. Mark Christensen, Carl Chang, "Blueprint for the Ideal Requirements Engineer", IEEE Computer, March 1996, pp. 12.

15. Luqi, Carl K. Chang and Hong Zhu, ``Specifications in Software Prototyping'', The Journal of Systems and Software, Vol. 42, 1998, pp. 125-140.

16. Carl K. Chang and Chiao-Chuan Shih, ``A Circular Skip-Cluster Scheme to Support Video-on-Demand Services'', ACM Multimedia Systems, Springer-Verlag, Vol. 7, No. 2, 1999, pp. 107-118.

17. Carl K. Chang, Gerald Engel, Willis King, Eric Roberts, Russ Shackelford, Robert H. Sloan, and Pradip K. Srimani, "Curricula 2001: Bringing the Future to the Classroom", IEEE Computer, Vol. 32, No. 9, September 1999, pp. 85-88.

18. Carl K. Chang and Mark Christensen, "Net Practice in Software Project Management", IEEE Software, Vol. 16, No. 6, Nov/Dec 1999, pp. 80-88.

19. Carl K. Chang, Yong Liu, Thribhuvana Murthy, James Kenevan and Pattanasak Mongkolwat, ``Simulation of UICCELL II'', SIMULATION, The Society for Computer Simulation International, Sept. 2000, Vol. 75, No. 3, pp. 128-140.

20. Carl K. Chang, Jane Cleland-Huang, Shiyan Hua and Annie Combelles, "On Function-Class Decomposition", IEEE Computer, Dec. 2001, pp. 87-93.

21. Carl K. Chang, Tao Zhang and Mark Christensen, "Genetic Algorithms for Project Management", Annals of Software Engineering, Kluwer Academic Publishers, Vol. 11, 2001, pp. 107-139.

22. Jane Huang-Cleland, Carl K. Chang, and Mark Christensen, "Event-Based Traceability for Managing Evolutionary Change", IEEE Trans. Software Engineering, Vol. 29, No. 9, Sep. 2003, pp. 796-810.

23. Jane Cleland-Huang, Carl. K. Chang and Jeff Wise, "Integrating Performance Related Impact Analysis into the Requirements Management Process", Requirements Engineering Journal, Springer-Verlag, Vol. 8, No. 3, Sept. 2003, pp. 171-182.

24. Carl K. Chang and Yujia Ge, "Genetic algorithm techniques and applications in management systems", book chapter in Intelligent Knowledge-Based Systems, Vol. 5, Kluwer Academic Press, 2004.

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26. C.K. Chang, J. Zhang, and K.H. Chang, "Survey of Computer Supported Business Collaboration in Support of Business Processes", International Journal of Business Process Integration and Management (IJBPIM), 1(2), 2006, pp. 76-100.

27. J. Xia, C.K. Chang, J. Wise, and Y. Ge, "An Empirical Performance Study on PSIM", The Computer Journal, Oxford University Press. Vol. 49. No. 5. 2006, pp. 509-526.

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35. José M. Reyes Álamo, Hen-I Yang, Ryan Babbitt, Johnny Wong, Carl K. Chang*, "* Support for Medication Safety and Compliance in Smart Home Environments", International Journal of Advanced Pervasive and Ubiquitous Computing, IGI Publishing, Vol. 1 No. 3, July-Sept. 2009, pp. 42-60.

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37. Carl K. Chang, et al. (Eds.), "Computationally Smart Environments", IEEE COMPSAC 2010 Proceedings, 19-23 July, Seoul, Korea.

38. Tae-Hyung Kim, Carl K. Chang and Simanta Mitra, "Design of Service-Oriented Systems using SODA," IEEE Trans. on Services Computing, Vol. 3, No. 3, July-Sept. 2010, pp. 236-249.

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114. Jung Ho Bae, Yeon Ji Jeong, Heung Seok Chae and Carl K. Chang, "Semantics based Cohesion and Coupling Metrics for Evaluating Understandability of State Diagrams", Proc. of IEEE COMPSAC 2011, Munich, Germany, July 18-21, 2011, Vol. 1, pp. 383-392. (acceptance rate: 20.6%)

115. Seon Yeol Lee, Hyun Jae Choi, Yeon Ji Jeong, Tae Ho Kim, Heung Seok Chae and Carl K. Chang, "An Improved Technique of Fitness Evaluation for Evolutionary Testing", Proc. of IEEE COMPSAC 2011, Munich, Germany, July 18-21, 2011, Vol. 2, pp. 190-193.

116. Kai-Shin Lu and Carl K. Chang, "Using Web Search Results and Genetic Algorithm to Improve the Accuracy of Chinese Spam Email Filters", Proc. of IEEE COMPSAC 2011, Munich, Germany, July 18-21, 2011, Vol. 2, pp. 286-291.

117. HenI Yang, Peter Martin, Debra Satterfield, Ryan Babbitt, Johnny Wong, Mack Shelley and Carl K Chang, "A Novel Interdisciplinary Course in Gerontechnology for Disseminating Computational Thinking", in Proc. of Frontiers in Education (FIE 2011), October 12-15, 2011, Rapid City, SD, pp. T3H-1 – T3H-6.

118. Hen-I Yang, Ryan Babbitt, Johnny Wong and Carl K. Chang, ""A Framework for Service Morphing and Heterogeneous Service Discovery in Smart Environments", in Proc. of the 10th International Conference on Smart Homes and Health Telematics (ICOST 2012), Artimino, Italy, 2012, pp. 9-17.

119. Hongyu Chen, Hen-I Yang, Heather Hooks, Joongsup Lee, Debra Satterfield, Johnny Wong, and Carl K. Chang, "Medbuddy: A Mobile Medicinal Management System for Children with ADD/ADHD", in Proc. of the 10th International Conference on Smart Homes and Health Telematics (ICOST 2012), Artimino, Italy, 2012, pp. 286-290.

120. Hen-I Yang, Peter Martin, Debra Satterfield, Johnny Wong, Mack Shelley and Carl K. Chang, "Interdisciplinary undergraduate learning modules in gerontechnology", Proc. of the 8th World Conference of the International Society for Gerontechnology (ISG*ISARC 2012), Eindhoven, Netherlands, 2012, p. 209.

121. Kai-Shin Lu and Carl K. Chang, "ALTA: Automatic Load-time Adaption Technique for Refactoring-based Software Component Evolution", Proc. of IEEE COMPSAC, Izmir, Turkey, July 16-20, 2012, pp. 203-212. (acceptance rate: 17.3%)

122. Wei Zhang, Carl K. Chang, Hen-I Yang and Hsin-yi Jiang, "Automatic Data Clustering Analysis of Arbitrary Shape with K-means and Enhanced Ant-based Template Mechanism", Proc. of IEEE COMPSAC, Izmir, Turkey, July 16-20, 2012, pp. 452-460. (acceptance rate: 17.3%)

123. Liyuan Xiao, Carl K. Chang, Hen-I Yang, Kai-Shin Lu and Hsin-yi Jiang, "Automated Web Service Composition using Genetic Programming", 5th IEEE International Workshop on Service Science and Systems, Proc. of IEEE COMPSAC, Izmir, Turkey, July 16-20, 2012, Vol. 2, pp. 7-12.

124. Haihua Xie, Carl K. Chang, Ming Hua and Kai-shin Lu, "The Concepts and Ontology of SiSL: A Situation-Centric Specification Language", 6th IEEE International Workshop on Requirements Engineering Services, Proc. of IEEE COMPSAC, Izmir, Turkey, July 16-20, 2012, Vol. 2, pp. 385-391.

125. Katsunori Oyama, Atsushi Takeuchi and Carl K. Chang, "Brain Lattice: Concept Lattice Based Causal Analysis of Changes in Mental Workload", Proceedings of 2013 IEEE International Multi-Disciplinary Conference on Cognitive Methods in Situation Awareness and Decision Support (CogSIMA), San Diego, Feb. 26-28, 2013, pp. 62-69.

126. Jeyoun Dong, Carl K. Chang and Hen-I Yang, "Identifying Factors for Human Desire Inference in Smart Home Environments", Proceedings of 2013 International Conference on Smart Homes and Health Telematics, Singapore, June 19-21, 2013, pp. 230-237.

127. Hai Yu, Celine Maria Amrita Anthony Sunderraj, Carl K Chang and Johnny Wong. Emotion Aware System for the Elderly. *ICOST 2014, Denver, USA*; in Pre-print Proceedings, pp. 189-194; Full paper in Springer LNCS 8456, pp. 175-183, 2014.

128. Liyuan Xiao, Yetian Chen and Carl K. Chang, "Bayesian Model Averaging of Bayesian Network Classifiers for Intrusion Detection", accepted by 9th IEEE International Workshop on Security, Trust, and Privacy for Software Applications", Proceedings of IEEE COMPSACW 2014, Vasteras, Sweden, July 21-15, 2014, pp. 128-133.

129. Ali Davish and Carl K. Chang, "GUIDiVa: Automated Discovery and Validation of State-based GUI Invariants", Proc. of IEEE COMPSAC 2014, Vasteras, Sweden, July 21-15, 2014, pp. 65-74. (acceptance rate: 22%)

130. Ali Darvish and Carl K. Chang, "Black-box Test Data Generation for GUI Testing", accepted for the 14th International Conference on Quality Software (QSIC), Dallas, October 2-3, 2014, pp. 133-138.

131. Hua Ming, Carl K. Chang and Jingwei Yang, "Dimensional Situation Analytics: From Data to Wisdom", Proc. 2015 IEEE 39th Annual International Computers, Software & Applications Conference, July 2015, Taiwan, pp. 50-59.

132. Haihua Xie and Carl K. Chang, "Detection of New Intentions from Users Using the CRF Method for Software Service Evolution in Context-Aware Environments", Proc. 2015 IEEE 39th Annual International Computers, Software & Applications Conference, July 2015, Taiwan, pp. 71-76.

133. Hoda Gholami and Carl K. Chang, "Situation-Aware Decision Making in Smart Homes". Inclusive Smart Cities and Digital Health, Springer LNCS 9677, pp. 71-82. (14th Int'l Conference on Smart Homes and Health Telematics, ICOST 2016, Wuhan, China, May 25-27, 2016.)

134. Yunfei Feng, Carl K. Chang and Honshu Chang, "An ADL Recognition System on Smart Phone". Inclusive Smart Cities and Digital Health, Springer LNCS 9677, pp. 148-158. (14th Int'l Conference on Smart Homes and Health Telematics, ICOST 2016, Wuhan, China, May 25-27, 2016.)

135. Katsunori Oyama, Kaoru Sakatani, Hua Ming and Carl K. Chang, "Hierarchical Self-Organizing Maps of NIRS and EEG Signals for Recognition of Brain States". Inclusive Smart Cities and Digital Health, Springer LNCS 9677, pp. 335-344. (14th Int'l Conference on Smart Homes and Health Telematics, ICOST 2016, Wuhan, China, May 25-27, 2016.)

136. Nimanthi Atukorala and Carl K. Chang, "Situation-Oriented Requirements Elicitation", Proc. 2016 IEEE 40th Annual International Computers, Software & Applications Conference, June 2016, Atlanta, pp. 233-238.

137. Hua Ming and Carl K. Chang, "Can Situations Help with Reusability of Software?", Human-Computer Interaction: Theory, Design, Development and Practice, Springer LNCS 9731, 2016, pp. 508-609. (18th International Conference on HCI 2016), Toronto, ON, Canada, July 17-22, 2016.)

138. Nimanthi Atukorala and Carl K. Chang, "Situation-Oriented Evaluation and Prioritization of Requirements". Requirements Engineering Toward Sustainable World, Springer CCIS 671, pp. 18-33. (3rd Asia-Pacific Requirements Engineering Symposium (APRES 2016), Nagoya, Japan, Nov. 10-12, 2016.)

139. Hoda Gholami and Carl K. Chang, "Situation-Aware Data-Driven Decision Making in Smart Environments Using MapReduce". Proc. 2017 IEEE 41st Annual International Computers, Software & Applications Conference, pp. 722-730, July 2017, Turin, Italy.

140. Jingwei Yang, Carl K. Chang and Hua Ming, "A Situation-Centric Approach to Identifying New User Intentions using the MTL Method." Proc. 2017 IEEE 41st Annual International Computers, Software & Applications Conference, pp. 347-356, July 4-8 2017, Turin, Italy.

141. Peng Sun, Jingwei Yang, Hua Ming and Carl K. Chang, "A Multi-layered Desires Based Framework to Detect User's Evolving Non-Functional Requirements". Proc. of IEEE COMPSAC 2018, Tokyo, July 2018, pp. 28-37.

142. Chen-Yeou Yu, Richard O. Oyeleke and Carl K. Chang, "Situation Based Energy Management Framework on Mobile Devices". Proc. of IEEE COMPSAC 2018, Tokyo, July 2018, pp. 284-289.

143. Richard O. Oyeleke, Chen-Yeou Yu and Carl K. Chang, "Situ-Centric Reinforcement Learning for Recommendation of Tasks in Activities of Daily Living in Smart Homes". Proc. of IEEE COMPSAC 2018, Tokyo, July 2018, pp. 317-322.

144. Omar Asiri and Carl K. Chang, "Investigating Users' Experiences and Attitudes towards Mobile Apps' Reviews", Proceedings of HCI International 2018, LNCS (Human-Computer Interaction. Interaction in Context), Vol. 10902, Spring, pp. 481-499.

145. Robert Ward and Carl K. Chang, "Scientific Agile", Proc. of IEEE COMPSAC 2019, Milwaukee, pp. 59-65.

146. Chen-Yeou Yu, Carl K. Chang and Wensheng Zhang, "A Situation Enabled Framework for Energy-Efficient Workload Offloading in 5G Vehicular Edge Computing", Proceedings of 2020 World Congress on Services (SERVICES), 2020, pp. 61-68, doi: 10.1109/SERVICES48979.2020.00027.

147. Oluwafemi Oyeleke, Carl K. Chang and Jennifer Margrett, "Situation-Driven Context-Aware Safety Model for Risk Mitigation using LTL in a Smart Home Environment", 2020 IEEE World Congress on Services (SERVICES), 2020, pp. 22-24, doi: 10.1109/SERVICES48979.2020.00018.

148. Chen-Yeou Yu, Carl K. Chang and Wensheng Zhang, "An Edge Computing Based Situation Enabled Crowdsourcing Blacklisting System for Efficient Identification of Scammer Phone Numbers", 2020 International Conference on Computational Science and Computational Intelligence (CSCI), sponsored by American Council on Science and Education, pp. 776-781, doi: 10.1109/CSCI51800.2020.00146.

149. Carl K. Chang, Paolo Ceravolo, Rong N. Chang, Sumi Helal, Zhi Jin, Xuanzhe Liu, and Hua Ming, Hua, "Software Services Engineering Manifesto - A Cross-Cutting Declaration," 2021 IEEE International Conference on Web Services (ICWS), 2021, pp. 703-709, doi: 10.1109/ICWS53863.2021.00014.

150. C. -Y. Yu, W. Zhang and C. K. Chang, "Edge-based Situ-aware Reinforcement Learning for Traffic Congestion Mitigation," *2022 IEEE International Smart Cities Conference (ISC2)*, Pafos, Cyprus, 2022, pp. 1-7, doi: 10.1109/ISC255366.2022.9922461.

151. C. K. Chang and Z. Wang, "Software Services Engineering Manifesto – Revisited," *2022 IEEE World Congress on Services (SERVICES)*, Barcelona, Spain, 2022, pp. 11-12, doi: 10.1109/SERVICES55459.2022.00023.

152. Hongyi Bian, Rong N. Chang, Kumar Bhaskaran, Wensheng Zhang and Carl K. Chang, "Distributed and Intelligent API Mediation Service for Enterprise-Grade Hybrid-Multicloud Computing", published in the proceedings of 2023 IEEE International Conference on Software Services Engineering.

153. Hongyi Bian, Wensheng Zhang and Carl K. Chang, "Situ-Oracle: A Learning-Based Situation Analysis Servicing Framework for BIoT Systems," published in the proceedings of 2023 IEEE International Conference on Software Services Engineering.

H-3. Invited Papers

A dozen invited papers were published in the past.

"From CC2001 to CS 2013, and Beyond", invited full paper for the Keynote speech at 2014 CNCC. Published in Chinese.

H-4. Department or Technical Reports

Technical Reports (over 150 reports)

H-5. Papers Presented, Seminar Talks given, and other International and National Activities

1. Seminar on ``Software Factory: U.S. and JAPAN'', Institute for Information Industry, Taipei, Taiwan, July, 1986.

2. Seminar on ``Software Engineering in United States: Its trends and Educational Issues'', Fujitsu Limited at Kawasaki Factory, Japan, May 1987.

3. Seminar on ``The Validation and Verification of Distributed Software Systems'', Kyushu University at Fukuoka, Japan, Oct. 1987.

4. Seminar on ``Verification and Validation for Distributed Software'', Fujitsu Limited at Nakahara Building, Kawasaki, Japan, October 1988.

5. Seminar on ``Software Engineering Research in UIC'', National Computer Board, Singapore, October 1988.

6. Seminar on ``Software Engineering Technology - Concepts & Practices'', given to software professionals in the public, sponsored by the Institute for Information Industry, Taiwan, December 1988.

7. Speech on ``Software Engineering Issues on Productivity & Quality'', 1988 Modern Engineering Technology Seminar (METS), Taiwan, December 1988.

8. Seminar on ``Software Quality Assurance'', a SEED kick-off seminar given to software professionals in the public, sponsored by the Institute for Information Industry, Taiwan, December 1988.

9. Seminar on ``Integral: An Integrated Verification and Validation Framework for Distributed Software'', Academia Sinica, Taiwan, December 1988.

10. Seminar on ``A Specification Based Testing Technique for Distributed Software'', National Chiao-Tung Univ. Taiwan, December 1988.

11. Seminar on ``From CASE to Software Productivity and Quality'', FUJITSU Corporate Seminar, Kawasaki, Japan, July 1989.

12. Seminar on ``A DISCOL based V&V Environment'', Kyushu University, Fukuoka, Japan, July 1989.

13. Seminar on ``INTEGRAL - An Integrated CASE'', NEC C&C Software Division, Tokyo, Japan, July 1989.

14. Seminar on ``A Vertical CASE - INTEGRAL'', AT&T Bell Labs, Naperville, Illinois, Nov. 1989.

15. Seminar on ``INTEGRAL - An Integrated CASE Tool Set'', Boston University, Feb, 1990.

16. Seminar on ``INTEGRAL - An Integrated CASE Tool Set'', University of Texas at Arlington, March 1990.

17. Seminar on ``INTEGRAL - a CASE Study'', University of SW Louisiana, March 1990.

18. Seminar on ``INTEGRAL - a case of CASE'', University of California-Riverside, March 1990.

19. Seminar on ``INTEGRAL - An Integrated CASE Tool Set'', Texas A & M University, April 1990.

20. Seminar on ``Challenges in the 1990s'', FUJITSU Corporate Seminar, Kawasaki, Japan, October 1990.

21. Seminar on ``Challenges in the 1990s'', NEC C&C Software Division, Tokyo, Japan, October, 1990.

22. Seminar on ``An Integrated CASE Environment'', NTT R&D Headquarter, Tokyo, Japan, October, 1990.

23. Seminar on ``Object-Oriented Software Development Methodology'', NTT R&D Headquarter, Tokyo, Japan, October, 1991.

24. Seminar on ``Are We Ready for New Software Technology?'', Fujitsu Workshop, Kawasaki, Japan, October, 1991.

25. Seminar on ``The DISCOL Specification System'', Tohoku University, Sendai, Japan, Oct. 1991.

26. Seminar on ``Is New Technology Ready for US?'', Toshiba, Kawasaki, Japan, October, 1991.

27. Seminar on ``Software Engineering Management'', Hitachi Software, Yokohama, Japan, Oct, 1991.

28. Seminar on ``Integrated Project Support Environment'', ROC-USA Bitateral Seminar on Core Software Technology, co-sponsored by US Academy of Sciences and ROC Academia Sinica, Taipei, Taiwan, June 9, 1992.

29. Seminar on ``The State of Visual Software Engineering'', Niigata University, Japan, March, 1993.

30. Seminar on ``The State of Visual Software Engineering'', Fujitsu Limited, Kawasaki, Japan, March, 1993.

31. Seminar on ``The State of Visual Software Engineering'', University of Alaska at Fairbanks, April, 1994.

32. Seminar on ``The State of Visual Software Engineering'', ROC-USA Bilateral Seminar on Multimedia Distributed Systems, co-sponsored by US Academy of Sciences and ROC Academia Sinica, Taipei, Taiwan, April 28, 1993.

33. Seminar on ``US Software Engineering Obsolete?'', presented at the Editorial Board and Industry Advisory Board of IEEE Software in the 1993 joint EB/IAB meeting at Paris, June 29, 1993.

34. Seminar on ``Software Engineering Obsolete'', CAPAMA-IA Annual Conference, University of Iowa, Iowa City, Oct. 23, 1993.

35. Seminar on ``UICCELL II Experience'', Fujitsu Limited, Kawasaki, Japan, June 24, 1994.

36. Seminar on ``Modern Software Engineering'', Academia Sinica, Taipei, Taiwan, June 30, 1994.

37. Seminar on ``Recent Trends in Software Engineering'', presented at Pan Asian Association of Motorola (PAAM), Schaumburg, Illinois, Aug. 18, 95.

38. Seminar on ``Visual Software Engineering'', NTT, Tokyo Japan, Feb 6, 1996. (AM)

39. Seminar on ``Visual Software Engineering'', NEC, Tokyo, Japan, Feb 6, 1996. (PM)

40. Seminar on ``Visual Software Engineering'', Institute for Social Information Science, Fujitsu Laboratories Ltd., Numazu, Japan, Feb 7, 1996.

41. Seminar on ``Visual Software Engineering'', Fujitsu Telecom, Kawasaki, Japan, Feb 8, 1996.

42. Seminar on ``Software Architecture Based Requirements Engineering'', Fujitsu Telecom, Kawasaki, Japan, July 25, 1997.

43. Seminar on ``Software Architecture Based Requirements Engineering'', Hiroshima University, Hiroshima, Japan, July 31, 1997.

44. Seminar on ``Software Architecture Based Requirements Engineering'', Tianjin University, Tianjin, China, August 4, 1997.

45. Seminar on ``Software Architecture Based Requirements Engineering'', Tsinghua University, Beijing, China, August 6, 1997.

46. Seminar on ``Software Architecture Based Requirements Engineering'', Peking University, Beijing, China, August 8, 1997.

47. Seminar on "SABRE Research at UIC", Lucent Technologies – Bell Labs, Naperville, Illinois, December 10, 1998.

48. Keynote Speech on "Computing Curricula in the New Century", Symposium on Future Computing Curricula in China, Ministry of Education, China, October 7-9, 2000, Chongqinq, China.

49. Keynote Speech on "Evolving the World of Computing and Networking - a 2020 Vision", Japan Gigabit Network Symposium, January 26, 2004, in conjunction with the IEEE/IPSJ International Symposium on Applications and the Internet, Tokyo, Japan.

50. Keynote Speech on "Evolving the World of Computing with New Curriculum and Professional Certification", Annual National General Assembly, Information Processing Society of Japan, March 9, 2004, Japan.

51. Keynote Speech on "From Silk Road to Silicon Road: Old Educators Never Die", Computer Innovation 6016, November 30, 2005, Beijing, China, delivered by Professor Robert Sloan because of schedule conflict.

52. TV Interview by CSDN China on "Who Invented the First Electronic Digital Computer?"; October 16, 2007, Beijing, China. CSDN.COM.CN was then the most popular Cyber media and attracted over one-million hits per day.

53. Keynote Speech on "Advancing the Computer Profession – Cross the Technological and Cultural Gaps", Beijing, China, April 20, 2008, Annual Conference of the Chinese Computer Federation.

54. Plenary Panel Chair, "Towards Omnificent Multimodal Situation-Aware Services", Washington DC, July 8, 2011, IEEE International Services Computing Conference.

55. Distinguished Lecture, "Cutting-edge *in-situ* Software Engineering Technologies", to be given to the School of Electrical Engineering and Computer Science, Peking University (ranked number 1 in China), Beijing, October 9, 2012.

56. Keynote Speech on "From Silk Road to Smart City: A Story on Singularity", APEC Smart City Industrial Technology Cooperation Forum, Asia-Pacific Economic Cooperation, December 17-20, 2012, Changzhou, China.

57. Plenary Speech on "From ABC to Soft Software Engineering (tentative title)", invited talk by the President of Bulgaria in celebration of John Vincent Atanasoff's 110th Birthday, Sofia, Bulgaria, October 4th, 2013.

58. Keynote Speech on "Situational Software Engineering", IEEE CIS International Conference on Active Media Technology, Maebashi, Japan, October 29-31, 2013.

59. Seminar on "Breaking the Glass Ceiling – Why and How of Academic Professional Service", National Chiao-Tung University, Taiwan, March 6, 2014.

60. Distinguished Lecture on "Situational Software Engineering", National Central University, Taiwan, March 7, 2014.

61. Distinguished Lecture on "Situational Software Engineering", Huazhong University of Science and Technology, China, March 31, 2014.

62. Seminar on "Break the Glass Ceiling", Huazhong University of Science and Technology, China, April 4, 2014.

63. Distinguished Lecture on "Situational Software Engineering", Nanjing University, China, April 8, 2014.

64. Keynote Speech on "Computing Education - From CC2001 to CS 2013, and Beyond", China National Computer Congress (CNCC), China Computer Federation (CCF), Zhengzhou, China, October 24, 2014.

65. Keynote Speech on "Software Defined Situations", 2014 Asia-Pacific Services Computing Conference (APSCC), Fuzhou, China, December 5, 2014.

66. Keynote Speech on "Situational Software Engineering for Individualization", Smart World Summit, Beijing, CHINA, August 11, 2015.

67. Distinguished Lecture on "Ten Myths in Computer Science and Software Engineering", Suchow University, China, November 11, 2015.

68. Distinguished Lecture on "Twelve Myths in Computer Science and Software Engineering", Marquette University, Milwaukee, Wisconsin, February 29, 2016.

69. Keynote Speech on "In Requirements Engineering, All Roads Lead to ROME", 3rd Asia-Pacific Requirements Engineering Symposium (APRES 2016), Nagoya, Japan, Nov. 8-10, 2016.

70. Plenary Speech on "The Ultimate Game – Intelligent and Near-Optimal Reality", 2017 Annual Xiangshan Science Conference, Shenyang, China, June 3, 2017.

71. Seminar on "Situ – Past, Present and Future", Ministry of Education National Key Lab on High-Confidence Software Technologies, Peking University, August 3, 2017.

72. Keynote Speech on "An Emerging Software Engineering Paradigm based on Situation Analytics in the IoT Era", 2017 Asia Pacific Symposium on Internetware, Shanghai, China, Sept. 23, 2017.

73. Seminar on "Optimal Aging – Key Issues for Digital Health", Ministry of Education National Key Lab on High-Confidence Software Technologies, Peking University, December 3, 2018.

74. Keynote Speech on "Optimal Aging – Promises and Limitations of Technology", 9th International Symposium on Engineering, Medicine and Biology Applications (SEMBA), Taiwan, March 1, 2019.

75. Keynote Speech on "Situation as a New Computational Abstraction for Human-Embedded Computing", 2019 Annual General Assembly of the Information Processing Society of Japan (IPSJ), June 5, 2019, Tokyo, Japan, upon receiving the Honorary Member award from IPSJ (the 8th foreign recipient in IPSJ's 60 years of history).

76. Keynote Speech on "Software Engineering and Practice at Age of 52 – Myths, Realities and Prospects", IPSJ SIGSE Workshop on Software Engineering co-organized by Nanzan University, Japan, November 26, 2020.

H-6. Editor's Messages and President's Messages

1. Carl K. Chang, ``Let's stop the bipolar drift'', IEEE Software, May 1990, p. 4.

2. Carl K. Chang, ``Working together to build software's future'', IEEE Software, Jan. 1991, p. 6.

3. Carl K. Chang, ``Continuing to build our editorial board'', IEEE Software, March 1991, p. 6.

4. Carl K. Chang and Angela Burgess, ``Global issues, trends in software practice'', IEEE Software, Sept. 1991, pp. 4,8.

5. Carl K. Chang, ``Volunteers who serve their profession'', IEEE Software, Jan. 1992, p. 8.

6. Carl K. Chang, ``Team-building takes more than slogans'', IEEE Software, May 1992, pp. 10-11.

7. Carl K. Chang, ``Building a consensus and editorial calendar'' IEEE Software, Sept. 1992, p. 6.

8. Carl K. Chang, ``Experimentalists who transfer technology'', IEEE Software, Jan. 1993, pp. 6,9.

9. Carl K. Chang, ``Combining vision and action produces results'', IEEE Software, July 1993, pp. 4,6.

10. Carl K. Chang, ``Is existing software engineering obsolete?'', IEEE Software, Sept. 1993, pp. 4-5.

11. Carl K. Chang, ``Planning ahead requires looking back'', IEEE Software, Nov. 1993, p. 5.

12. Carl K. Chang, ``Changing face of software engineering'', IEEE Software, Jan. 1994, pp. 4-5.

13. Carl K. Chang, ``Logging off: lessons learned as editor'', IEEE Software, Nov. 1994, p. 4.

14. Carl K. Chang, ``President's Message: Evolving the World with the World's Computer Society", IEEE Computer, Jan. 2004, pp. 10-12.

15. Carl K. Chang, ``President's Message: Transforming the World's Computer Society", IEEE Computer, Dec. 2004, pp. 14-15.

16. Carl K. Chang, ``My Vision for Computer", IEEE Computer, Jan. 2007, pp. 7-8.

17. Rangachar Kasturi and Carl K. Chang, "Build a Global Industrial Forum", IEEE Computer, May 2008, pp. 67-69.

18. Carl K. Chang, "Reversing the Bipolar Drift - Introducing the IAB," IEEE Computer, July 2009, pp. 20-24.

19. Oliver Bimber and Carl K. Chang, "Computational Archaeology – Reviving the Past with Present-Day Tools", IEEE Computer, July 2011, pp. 30-31.

20. Carl K. Chang, David Weiss and Mike Hinchey, "Where Software Engineering Meets…", IEEE Computer, November 2011, pp. 17-18.

21. Carl K. Chang, Vladimir Getov and Kelvin Sung, "Computing in Asia: A Sampling of Recent Success Stories", IEEE Computer, June 2012, pp. 21-23.

22. Carl K. Chang and Bill Schilit, "Aware Computing", IEEE Computer, April 2014, pp. 20-21.

23. Doris Carver, W.K. Chan and Carl K. Chang, Hongji Yang, "Editorial: Special Issue on Software Engineering Technology and Applications", The Journal of Systems and Software, Elsevier, Dec. 2016, pp. 85-86.

24. Doris Carver, W.K. Chan and Carl K. Chang, Hongji Yang, "Editorial: Software Engineering and Applications for Cloud-Based Mobile Systems", IEEE Trans. Services Computing, Vol. 9, No. 5, Sep/Oct

2016, pp. 742-744.

25. Upkar Varshney and Carl K. Chang, "Guest Editors' Introduction: Smart Health and Well-Being", IEEE Computer, Nov. 2016, pp. 11-13.

26. Carl K. Chang, Sorel Reisman and Edmundo Tovar, "Guest Editor's Introduction: Advances in Learning Technologies", IEEE Computer, Vol. 50, No. 5, May 2017, pp. 14-17.

H-7. Column Articles

1. Robert L. Martin and Carl K. Chang, Point - Counterpoint ``How to Solve the Management Crisis?" IEEE Software, Nov. 1994, pp. 14-15.

2. Mark Christensen and Carl K. Chang, Insider ``Blueprint for the Ideal Requirements Engineer," IEEE Software, March 1996, p. 12.

I. Committee and Administrative Work

I-1. Department Committees at UIC

- 1984-85: Computer Instructional Lab Committee.

- 1985-86: Advisory Committee, Graduate Committee, Colloquium & Research Committee and Student Scholarship Committee.

- 1986-87: Graduate Committee, Computer Committee.

- 1987-88: Computer Committee, Student Scholarship Committee, and Colloquium & Research Committee.

- Computer Committee, Student Scholarship Committee.

- 1989-90: Computer Committee, Student Scholarship Committee.

- 1990-91: Graduate Committee, Undergraduate Committee, Graduate Admission Committee, Computer Committee.

- 1991-92: Graduate Committee, Undergraduate Committee, Graduate Admission Committee, Computer Committee.

- 1992-93: Graduate Committee, Undergraduate Committee, Computer Committee.

- 1993-94: Graduate Committee, Undergraduate Committee, Computer Committee.

- 1994-1995: Sabbatical Leave.

- 1995-1996: Graduate Committee, Undergraduate Committee, Computer Committee.

- 1996-1997: Undergraduate Committee, Chairing the Ph.D. Qualifier Subcommittee on Software Engineering and Programming Languages, Chairing the Subcommittee of the Undergraduate Committee on ``Progressing Intensive Courses with LAB/TA''.

- 1997-1998: Undergraduate Committee, Computer Committee, Chairing the Ph.D. Qualifier Subcommittee on Software Engineering and Programming Languages, Chairing the Task Force on ``Developing Formal Labs for EECS 371''.

- 1998-1999: Undergraduate Committee, Graduate Committee, Computer Committee.

- 1999-2000: Undergraduate Committee, Computer Committee.

- 2000-2001: Director of Graduate Studies, Chair – Web Design Committee for the new Computer Science Department.

I-2. University Committees at UIC

- 1993-94: University Senate.

- 1994-95: University Senate.

- 1995-96: University Senate.

- 1996-present: UIC Representative to the IBHE Articulation Panel on Computer Science.

- 1998-2000: IEEE Student Chapter Faculty Advisor.

I-3. Department Committees at ISU

- Outreach Committee (Chair, 2013-14).

- Industry Partnership Committee (Chair, 2014-15).

- Faculty and Staff Recognition and Award Committee (member, 2013-14; Chair, 2014-).

- Software Engineering Ad Hoc Committee on Master Degree Program Proposal (Chair, 2015-).

- ISU/NCU Exchange Program (Professor in Charge, 2014-).

- Nguyen Software Engineering Endowed Chair Search Committee (Chair, 2017-2018).

- Software Engineering Strategic Planning Committee (member, 2018).

- Faculty and Staff Recognitions and Awards Committee (Chair, 2017-present).

- Steering Committee of the P&T Committee (member, 2019-present).

- Software Engineering Faculty Search Committee (member, 2020).

I-4. University Committees at ISU

- Dr. John Vincent Atanasoff's 100th Birthday Celebration Planning Committee; General Chair of the JVA-2003 International Symposium on Modern Computing (http://www.iastate.edu/JVA-2003) .

- Member, CIO Search Committee, 2004.

- Member, Senate Committee on Information Technology, 2004-2008.

- Member, Steering Committee, JVA Initiative, 2005-2013.

- Advisory Committee Member, Gerontology Program, 2014-2017.

- Campus-wide Computer Curriculum Coordination Committee (member, 2015-2017).

- Faculty Senate (Elected Senator, 2020-2022).

J. **Professional and Public Service Committees**

J-1. Editorial Services

- Editor, IEEE Trans. on Services Computing, 2015-2017.

- Editor-in-Chief Emeritus for IEEE Computer, since 2011.

- Edited a theme issue on "Mobile and Cloud Services for Digital Health", IEEE Trans. on Services Computing, March 2018.

- Edited a theme issue on "Learning Technologies", IEEE Computer, May 2017.

- Edited a theme issue on "Software Engineering Technology and Applications", The Journal of Systems and Software, December 2016.

- Edited a theme issue on "Smart Health and Well-Being", IEEE Computer, November 2016.

- Edited a theme issue on "Software Engineering and Applications for Cloud-Based Mobile Systems", IEEE Trans. Services Computing, September/October 2016.

- Edited a theme issue on "Aware Computing", IEEE Computer, April 2014.

- Edited a theme issue on "Computing in Asia", IEEE Computer, June 2012.

- Edited a theme issue on "Software Engineering Meets…", IEEE Computer, October 2011.

- Edited a theme issue on "Computational Archaeology", IEEE Computer, July 2011.

- Editor-in-Chief, IEEE Computer, starting January 1, 2007-2010.

- Guest Editor (with Frank Liu and T. Ming Jiang) for a special issue on "Computer Software and Applications", The Journal of Systems and Software, Volume 83, Issue 2, February 2010.

- Guest Editor for a special issue on "Yau", The Journal of Systems and Software, Volume 82, Issue 10, October 2009.

- Editor, Requirements Engineering Journal, Springer-Verlag, 2002-2006.

- Member, Advisory Board, Information Technologies and Control, Bulgarian Union of Automatics and Informatics (UAI), 2005-present.

- Editor-in-Chief Emeritus for IEEE Software, 1997-2000.

- Editor-in-Chief for IEEE Software, 1991 - 1994.

- Editor for a special volume on "Software Management", Annals of Software Engineering, Baltzer Science Publishers, The Netherlands, to be published in the first quarter, 2001.

- Guest Editor for a special issue on "Setting the Standards", IEEE Software, Nov/Dec 1998.

- Editor, IEEE Computer Society Press, 1993 - 1999.

- Guest Editor for a special issue on "Software in the Far East", IEEE Software, March 1989.

- Panelist on the Review Panel for Republic of China's Software Engineering Standards.

- Referee for IEEE Transactions on Software Engineering.

- Referee for IEEE Transactions on Computers.

- Referee for IEEE Computer Society's COMPUTER.

- Referee for IEEE Computer Society's SOFTWARE.

- Referee for the IEEE Computer Society's COMPSAC Conference since 1980.

- Referee for the IEEE International Conference on Programming Languages since 1986.

- Referee for National Computer Conference, 1986.

- Referee for 1987 International Conference on Parallel Processing.

- Referee for the 1987 International Conference on Data Engineering.

- Referee for the 1992 International Conference on Computer and Information.

- Referee for the 1992 International Conference on Software Engineering and Knowledge Engineering.

- Referee for many other IEEE or non-IEEE international conferences.

J-2. Services and Leadership Roles in the Professional Societies

- Executive Committee Member for IEEE/CS Technical Committee on Computer Languages (TCCL) for 1986-88.

- Governor, Board of Governors of IEEE Computer Society, 1995-1997.

- IEEE/CS Audit Committee Member ,1995-97.

- IEEE/CS YUFORIC Task Force ExCom Member ,1995 – present.

- IEEE/CS Publications Board Member ,1996 – present.

- IEEE/CS Awards Committee Member ,1996 – present.

- IEEE/CS Technical Council on Software Engineering ExCom Member ,1996 – 1999.

- Chair, EIC Search Committee for IEEE Transactions on Knowledge and Data Engineering, 1996.

- Chair, EIC Search Committee for IEEE Multimedia, 1997.

- IEEE/CS Magazine Operations Committee Chair 1997 – present.

- Governor, Board of Governors of IEEE Computer Society, 1998-2000.

- Secretary, Board of Governors of IEEE Computer Society, 1998.

- Chair, EIC Search Committee for IEEE Software, 1998.

- Co-Chair, Joint Task Force on "Computing Curricula 2001", IEEE Computer Society and ACM, 1998-2001.

- Vice President, Press Activities, IEEE Computer Society, 1999.

- Chair, EIC Search Committee for IEEE Software, 2000.

- Chair, EIC Search Committee for IEEE Transactions on Knowledge and Data Engineering, 1999.

- (elected) First Vice President, Educational Activities, IEEE Computer Society, 2001.

- Vice President, Educational Activities, IEEE Computer Society, 2002.

- (elected) 2004 President, IEEE Computer Society.

- (elected) 2005 Chair, IEEE Board Meetings and Services Committee.

- Chair, EIC Search Committee for IEEE Trans. on Services Computing, 2010.

- Chair, EIC Search, Committee for IEEE Trans. on Services Computing, 2012.

- Appointed President Emeritus, IEEE Computer Society (2013-).

- (appointed) President Emeritus, IEEE Computer Society (2013-).

J-3. Services and Leadership Roles in Conferences

- Member of Program Committee for the 1986 IEEE International Conference on Computer Languages (ICCL), held on Oct. 27-30, at Miami Beach, Florida; chaired paper session on ``Logic Programming".

- Program Track Director on ``Systems Software and Languages" for the Program Committee of 1987 AFIPS National Computer Conference, held on June 15-18, 1987 at Chicago.

- Conference Chairman for CAPAMA 85, which was jointly sponsored by CAPAMA and College of Engineering, UIC, on March 30, 1985.

- Steering Committee Co-chairman for CAPAMA 86, which was jointly sponsored by CAPAMA and Northern University, April 12, 1986.

- Program Advisor for 1987 International Conference on Advanced Science & Technology (ICAST), co-sponsored by CAPAMA and AT&T Bell Laboratories, held in RAMADA Hotel, Rosemont, Illinois, on March 30, 1987.

- Program Area Chair, 1988 IEEE ICCL, Miami, Florida, October 1988.

- Panel Session Chair on ``Specification Languages - Status and Trends'', 1988 IEEE ICCL.

- Member of Program Committee, 1988 International Computer Symposium (ICS) held at Taiwan, December 1988.

- Session Chair for the Panel on ``Software Engineering Management - Issues on Productivity and Quality'', 1988 ICS, December 1988.

- Session Chair on ``Formal Semantics of Concurrency'', InfoJapan'90, Tokyo, Japan, Sept. 1990.

- Session Chair on ``Computer Visualization'', 1991 ICAST, Argonne National Lab., March 1991.

- Chief organizer of the First International Forum on ``Trends of Global Software Technologies'', held in Maui, Hawaii, June 20-25, 1991.

- Stream Chair and Program Committee Member for International Conference on Computing and Information, ICCI, Toronto, Canada, May, 1992.

- Session Chair for the Panel on ``Software Reuse - Practices and Outlook'', 1992 ICCI, Toronto, Canada, May 1992.

- Program Committee Member for IASTED (International Association of Science and Technology for Development) International Conference on Reliability, Quality Control and Risk Assessment, Washington, D. C., November 4-6, 1992.

- Conference Co-Chairperson for 1992 Mid-American Conference on Science and Technology Applications MACSTA, Lisle, Illinois, July 1992.

- Steering Committee Chair for 9th International Conference on Advanced Science and Technology, March 27, 1993.

- Program Committee Member for 1993 IEEE International Conference on Software Engineering, Baltimore, Maryland, May 17-21, 1993.

- Program Chair for 5th International Conference on Computing and Information, Sudbury, Ontario, Canada, May 27-29, 1993.

- Steering Committee Member and Program Committee Member for 1994 IEEE International Conference on Requirements Engineering, Colorado Springs, April 18-22, 1994.

- Minitrack Coordinator for 27th Hawaii IEEE International Conference on System Sciences on Software Technology, Hawaii, January 4-7, 1994.

- Steering Committee Chair for 10th International Conference on Advanced Science and Technology, March 26, 1994.

- General Chair for the 1996 IEEE International Conference on Requirements Engineering, Colorado Springs, Colorado, USA, April 15-18, 1996.

- Steering Committee Member, ICAST/ICMIS 1997, held at Motorola University, Schaumburg, IL, March 1997.

- Program Co-Chair for the 1997 IEEE Workshop on Future Trends of Distributed Computing Systems, Tunis, Tunisia, October 29-31, 1997.

- Program Committee Member, Asian-Pacific Software Engineering Conference, Hong Kong, December 2-5,1997.

- Steering Committee Chair for the 1998 IEEE International Conference on Requirements Engineering, Colorado Springs, Colorado, USA.

- Steering Committee member for the 1999 IEEE Workshop on Future Trends of Distributed Computing Systems, Cape Town, South Africa, December, 1999.

- Steering Committee Chair for the 2000 IEEE International Conference on Requirements Engineering, Schaumburg, Illinois, June 19-23, 2000.

- Panel Chair on "Computing Curricula 2001", World Computer Congress 2000, IFIP, Beijing, China, August 21-25, 2000.

- Steering Committee Member for the 2000 IEEE International Computer Software and Applications Conference, Taipei, Taiwan, October 25-27, 2000.

- Steering Committee Member for the 2001 IEEE International Computer Software and Applications Conference, Naperville, Illinois, October 8-12, 2001.

- Steering Committee Member for the 2001 IEEE Symposium on Applications and the Internet (SAINT 2001), San Diego, California, January 8-12, 2001.

- Program Chair for the 2002 IPSJ/IEEE-CS Symposium on Applications and the Internet (SAINT 2002), January 28-February 1, 2002, Nara, Japan.

- General Chair for the 2003 IEEE-CS/IPSJ Symposium on Applications and the Internet (SAINT 2003), January 27-January 31, 2003, Orlando, Florida.

- General Chair for the 2003 IEEE Requirements Engineering Conference (RE'03), September 8-12, 2003, San Francisco, California.

- General Chair for the International Symposium on Modern Computing (JVA-2003).

- Steering Committee Chair for the IEEE-CS/IPSJ Symposium on Applications and the Internet (SAINT), 2004-05.

- General Chair for the 2006 IEEE Computer Software and Applications Conference (COMPSAC), September 17-21, Chicago, Illinois.

- Steering Committee Chair for the 2006 IEEE Computer Society Congress on Software Technology and Engineering Practice (CoSTEP), Chicago, September 17-22, 2006.

- General Chair for the IEEE 2006 John Vincent Atanasoff Symposium on Modern Computing (JVA 2006), October 3-6, 2006, Sofia, Bulgaria.

- Member, Steering Committee, International Conference on Mobile Wireless Middleware, Operating Systems, and Applications (ICST MOBILWARE), since 2007; Chair since 2012.

- Member, Scientific Committee, International Conference on Smart Homes and Health Telematics (ICOST), since 2007.

- General Chair, International Conference on Smart Homes and Health Telematics (ICOST), Ames, Iowa, June 28-July 2, 2008.

- General Chair, 2010 International Conference on Mobile Wireless Middleware, Operating Systems, and Applications (ICST MobilWare), Chicago, Illinois, USA, June 30-July 2, 2010.

- Chair, Standing Committee, IEEE Computer Society Signature Conference on Software Technology and Applications (IEEE COMPSAC), 2006-2015.

- Standing Chair, IEEE COMPSAC Symposium on Software Engineering Technology and Applications (SETA), 2015-present.

- General Chair, 2016 International Conference on Smart Homes & Health Telematics (ICOST), Wuhan, China, May 25-27, 2016.

- General Chair, 2016 IEEE International Conference on Mobile Services, San Francisco, June 27- July 2, 2016.

- Chair, Steering Committee, IEEE World Congress on Services (a.k.a. IEEE SERVICES) – an umbrella of seven co-located IEEE conferences including IEEE ICWS, IEEE SCC, IEEE CLOUD, IEEE ICDH, IEEE EDGE, and IEEE QSW, from 2017-2022.

J-4. Sustained Services to IEEE COMPSAC (IEEE-CS Signature Conference on Software Technology and Applications)

A sustained member and leader of the IEEE COMPSAC community since 1983, formerly Chair of the Standing Committee (2006-2015), and chaired or coordinated paper sessions and panel sessions, including:

1. chaired panel session on ``CHILL Language'', COMPSAC 83.

2. coordinated panel session on ``CHILL Language Environments'', COMPSAC 83.

3. chaired paper session on ``Software Tools'', COMPSAC 84.

4. coordinated panel session on ``Telecommunications Software Environments'', COMPSAC 84.

5. coordinated panel session on ``Switching Software Architecture'', COMPSAC 84.

6. coordinated panel session on ``Software Reusability'', COMPSAC 84.

7. chaired paper session on ``Software Testing'', COMPSAC 85.

8. chaired panel session on ``Software Factories - U.S. and JAPAN'', COMPSAC 85.

9. panelist on ``Software Engineering Management'', COMPSAC 85.

10. chaired panel session on ``Impact of Knowledge Based Technology'', COMPSAC 86.

11. chaired paper session on ``Requirements Specification'', COMPSAC 86.

12. chaired panel session on ``Workstation Environment for Software Productivity'', COMPSAC 87.

13. chaired paper session on ``Software Reuse'', COMPSAC 90.

14. chaired paper session on ``Testing and Debugging'', COMPSAC 92.

15. chaired paper session on ``Software Testing'', COMPSAC 94.

16. Program Co-chair, COMPSAC 96.

17. coordinated COMPSAC 98 sessions.

18. chaired paper session on "Software Process and Management", COMPSAC 99.

19. chaired panel session on "Virtual University", COMPSAC 2000.

20. chaired paper session on "Requirements Engineering", COMPSAC 2001.

21. chaired paper session on "Network Systems", COMPSAC 2003.

22. chaired paper session on "Software Architecture", COMPSAC 2004.

23. Served on panel session "Software Engineering Education in the New Millennium; position statement on "Software Engineering Education in the New Millennium – A View from Asia", COMPSAC 2006.

24. Hosted "Software JVA Initiative Roundtable: 70 Years Electronic Digital Computing that Changed the World", Wednesday July 22, COMPSAC 2009.

25. Presided over the opening session for the IEEE COMPSAC conference from 2006-2013.

26. Led IEEE-CS Presidents Delegation to visit the Ministry of Education of The Republic of China (Taiwan) to promote COMPSAC 2015 as the Computer Society's flag ship conference. July 29, 2013.

27. Organized 2015 COMPSAC Distinguished Speakers Bureau; served as a distinguished speaker.

28. Organized 2019 COMPSAC Plenary Panel on "Agile, Continuous Integration and DevOps", served as Panel Chair.

J-5. Regional and Community Services

- Vice President of Chinese Academic and Professional Association in Mid-America (CAPAMA) from 1985-1987.

- President of Naperville Chinese Association from 1985-1986.

- Secretary of Mid-America Chinese Science and Technology (MACSTA) from 1991-92.

- Executive Committee Member for IEEE/CS Technical Committee on Software Engineering (TCSE) for 1991 - now.

- President for CAPAMA, 1993-1994.

J-6. Other Significant Professional Services

- Served numerous times as panelist for the NSF Review Panels (CAREER, CSR, ITR, HDCCSR, etc.)

- Served several times as external reviewer for curriculum development or reform – Hong Kong, Malaysia, Taiwan.

- Served often as external reviewer for promotion & tenure cases inside and outside ISU, domestic and foreign.

- Served several times as external review for governmental research grants (Hong Kong, Austria).

- Served as reference in support of ISU faculty awards (distinguished professorship, university professorship, endowed chair professorship, etc.)

- Served as reference to support membership elevation to fellow for professional associations including IEEE, ACM, AAAS, etc.

- Invited to participate in the ABET IT Accreditation Workshop hosted by the National Academy of Engineering, January 20-22, 2003, hosted by the National Academy of Engineering.

- Served on the Advisory Board, China's National Key Basic Research and Development Program (so-called 973 Projects) on Software, hosted by Peking University.

- Served as Member of the Steering Committee, JVA Initiative, since 2006.

- Invited as Panelist for the Workshop on "Meeting Global IT Skills Needs – The Role of Professionalism" jointly sponsored by IFIP, The British Computer Society, WITSA, and OECD, October 25-27, 2002.

Appendix D-1. Teaching Record

List of UIC courses taught in each quarter/semester between 1984-2001

Quarter & Year	Course	Title of Course
Developed	EECS 481	Advanced Topics in Software Engineering (1984)
Developed	EECS 482	Software Engineering Environments (1984)
Fall 1985	EECS 373	Data Base System
Winter 1986	EECS 270	Introduction to Data Structures
Spring 1986	EECS 481	Advanced Topics in Software Engineering
Spring 1986	EECS 493	Fundamentals of Real-Time Software (at Motorola)
Fall 1986	EECS 373	Data Base System
Fall 1986	EECS 482	Software Engineering Environments (Video)
Winter 1987	EECS 487	Computer Systems Measurement and Modeling
Fall 1987	EECS 373	Data Base Systems
Fall 1987	EECS 481	Advanced Topics in Software Engineering
Spring 1988	EECS 373	Data Base Systems (at Motorola)
Spring 1987	EECS 482	Software Engineering Environments (at Motorola)
Fall 1988	EECS 302	File and Communication Systems
Fall 1988	EECS 481	Advanced Topics in Software Engineering
Winter 1989	EECS 274	Introduction to Software Engineering
Spring 1989	EECS 482	Software Engineering Environments
Fall 1989	EECS 481	Advanced Topics in Software Engineering
Fall 1989	EECS 373	Data Base Systems (at COD)
Winter 1990	EECS 483	Distributed Computing Systems (at Motorola)
Spring 1990	EECS 482	Software Engineering Environments
Fall 1990	EECS 481	Advanced Topics in Software Engineering
Winter 1991	EECS 481	Advanced Topics in Software Engineering (Video)
Winter 1991	EECS 483	Distributed Computing Systems
Spring 1991	EECS 482	Software Engineering Environments
Fall 1991	EECS 570	Advanced Topics in Software Engineering
Developed	EECS 570	Advanced Topics in Software Engineering (Video, 1992)
Spring 1992	EECS 370	Software Design
Fall 1992	EECS 570	Advanced Topics in Software Engineering
Fall 1992	EECS 370	Software Design
Spring 1993	EECS 571	Software Engineering Environments
Summer 1993	EECS 570	Advanced Topics in Software Engineering
Fall 1993	EECS 570	Advanced Topics in Software Engineering
Fall 1993	EECS 480	Database Systems

Spring 1994	EECS 571	Software Engineering Environments
Summer 1994	EECS 571	Software Engineering Environments (Motorola)
Spring 1995	EECS 573	Distributed Computing System (Motorola)
Fall 1995	EECS570	Advanced Topics in Software Engineering
Spring 1996	EECS571	Software Engineering Environments
Spring 1996	EECS375	Computer Ethics
Fall 1996	EECS371	Operating Systems
Fall 1996	EECS573	Distributed Systems
Spring 1997	EECS375	Computer Ethics
Spring 1997	EECS571	Software Engineering Environments
Fall 1997	EECS371	Operating Systems
Spring 1998	EECS375	Computer Ethics
Spring 1998	EECS571	Software Engineering Environments
Fall 1998	EECS371	Operating Systems
Fall 1998	EECS570	Advanced Topics in Software Engineering
Spring 1999	EECS571	Software Engineering Environments
Fall 1999	EECS573	Distributed Computing Systems
Fall 1999	EECS480	Database Systems
Fall 1999	EECS573	Computer Ethics
Spring 2000	EECS571	Software Engineering Environments
Spring 2000	EECS375	Computer Ethics
Fall 2000	EECS570	Advanced Topics in Software Engineering
Fall 2000	EECS375	Computer Ethics

List of Auburn courses taught in 2001-2002

Fall 2001	COMP7360	Wireless and Mobile Networks
Spring 2002	COMP7360	Wireless and Mobile Networks

List of ISU courses taught in 2002-present

Fall 2002	COMS 591	Graduate Student Orientation
Fall 2002	COMS 610	Seminar on Requirements Engineering
Fall 2003	COMS 591	Graduate Student Orientation
Fall 2004	COMS 591	Graduate Student Orientation
Fall 2004	COMS 103	Computer Literacy and Applications (as lead instructor)
Spring 2005	COMS 103	Computer Literacy and Applications (as lead instructor)
Fall 2005	COMS 591	Graduate Student Orientation
Fall 2005	COMS 103	Computer Literacy and Applications (as lead instructor)

Spring 2006	COMS 103	Computer Literacy and Applications (as lead instructor)
Spring 2006	COMS 103	Computer Literacy and Applications (as lead instructor)
Fall 2006	COMS 103	Computer Literacy and Applications (as lead instructor)
Spring 2007	COMS 103	Computer Literacy and Applications (as lead instructor)
Fall 2007	COMS 103	Computer Literacy and Applications (as lead instructor)
Spring 2008	COMS 103	Computer Literacy and Applications (as lead instructor)
Fall 2008	COMS 103	Computer Literacy and Applications (as lead instructor)
Fall 2008	COMS 409/509	Requirements Engineering (as lead instructor)
Spring 2009	COMS 103	Computer Literacy and Applications (as lead instructor)
Fall 2009	COMS 103	Computer Literacy and Applications (as lead instructor)
Spring 2010	COMS 103	Computer Literacy and Applications (as lead instructor)
Fall 2011	COMS 104	Introduction to Computers (as instructor's mentor)
Fall 2012	COM S 104	Introduction to Computer (as lead instructor)
Fall 2013	COMS 414/514	Gerontechnology in the Smart Home Environment (co-teach with Johnny Wong)
Spring 2014	COMS 610	Situational Software Engineering
Fall 2014	COMS 207XW	Fundamentals of Computer Programming
Fall 2014	COMS 415/514	Gerontechnology in the Smart Home Environments
Spring 2015	COMS 610	Situational Software Engineering
Fall 2015	COMS 207XW	Fundamentals of Computer Programming
Fall 2015	COMS 414/514	Gerontechnology in the Smart Home Environments
Fall 2015	COMS 410/510	Distributed Software Development
Fall 2016	COMS 207XW	Fundamentals of Computer Programming
Fall 2016	COMS 414/514	Gerontechnology in the Smart Home Environments
Fall 2016	COMS 410/510	Distributed Software Development
Fall 2017	COMS 665B	Advanced Topics in Software Engineering: Empirical
Fall 2017	COMS 414/514	Gerontechnology in the Smart Home Environments
Fall 2017	COMS 410/510	Distributed Software Development
Fall 2018	COMS 207XW	Fundamentals of Computer Programming
Fall 2018	COMS 414/514	Gerontechnology in the Smart Home Environments
Fall 2018	COMS 410/510	Distributed Software Development
Fall 2019	COMS 414/514	Gerontechnology in the Smart Home Environments
Fall 2019	COMS 410/510	Distributed Software Development
Fall 2020	COM S 104WWW	Introduction to Programming
Fall 2020	COMS 410/510	Distributed Software Development
Fall 2021	COM S 104WWW	Introduction to Programming
Fall 2021	COMS 410/510	Distributed Software Development
Fall 2021	COMS 414/514	Gerontechnology in the Smart Home Environments
Spring 2022	COM S 104WWW	Introduction to Programming

Appendix E-1. Graduate Students Supervised

I. M.S. Projects completed at UIC (more than 200 in total)

II. M.S. Theses completed

Academic Advising at UIC:

1. Howard Jiang, ``An Approach to Program Slicing for Programming Language C'', March 1986.

2. Huiyu Wang, ``An Approach to Distributed Software Systems Testing'', April 1986. [Motorola]

3. Daniel Yao, ``An Efficient Parallelizing Allocation Algorithm for Distributed Computing System'', March 1987. [Motorola]

4. Jeffrey Yang, ``A New Approach to Software Reliability Modeling'', March 1987. [Unisys]

5. Dejan Srdjevic, ``An Approach to Distributed Software System Debugging'', July 1987.

6. Rong-Lin Shen, ``High-Level Petri-Net Models for Scene Analysis'', Nov. 1987. [Taiwan Institute of Technology]

7. Mu-Fen Chin, ``A Petri Net to Great SPN Translator for Performance Analysis of Distributed Computing Systems'', Jan. 1988.   [Bell Labs]

8. Naray Gopal, ``A Knowledge-Based System Approach to the Development of A System Functional Requirement Specification Processor'', Jan. 1988. [Bell Labs]

9. Khalil Dajani, ``Distributed Debugging'', Jan. 1991.   [Motorola]

10. Harry Kougias, ``Modeling of X.25 in Petri Net using GSPN'', March 1991. [Rockwell International]

11. Kevin G. Andersen, ``Fundamental Metrics for Object-Oriented Software Development'', Dec. 1995. [Motorola]

12. Edwin Sinio Gonzales, ``A Theory and Evaluation of Class-Based Complexity Metrics'', March 1996. [Motorola]

13. Yi Ming Zhou, "A Better Usage of the Cluster Placement Scheme for a Large-scale Video-On-Demand (VOD) Server", May 1996.

14. Lie Cai, ``Formalizing Robert's Rules of Order in Petri Nets'', Aug. 1997. [Motorola]

15. Yu Di, "Timeline Based Model for Project Scheduling with Genetic Algorithms", March 2001. [[The Hull Group]

16. Yu Zhu, "Goal-Oriented Impact Estimation of Requirements Changes", October 2001. [3Com]

17. Jeffrey Wise, "Using UML for Performance Specification and Analysis of Distributed Software Systems," October 2002. [3Com]

Academic Advising at ISU:

18. Shamshul Shaikh, "Autoforms: a tool to enable rapid application development", Fall 2003. (with Simanta Mitra)

19. Yujia Ge, "Capability based Software Project Scheduling with System Dynamics and Heuristic Search," November 2004. [Zhejiang Gongshang University]

20. Dmitry Kirilov, "PANORAMA - a tool to deal with multiple decompositions of a software system," Spring 2008. (with Simanta Mitra)

21. Renish Palapetty, "An Experimental Study of the Effectiveness of PANORAMA as a Maintenance Tool", December 2009. [Cerner Corp] (with Simanta Mitra)

22. Liyuan Xiao, "Automated Web Service Composition Using Genetic Programming", December 2009. [moved on to PhD]

23. Naga Bhagvanth Ram Vattumalli, "Panorama – a software maintenance tool", December, 2010. (with Simanta Mitra)

24. Heyong Wang, "Learning Node Relationship in Social Networks", May, 2012.

25. Archit Saraf, "Design and development of a tool to analyze and extract useful parts of code from open source projects", May 2012. (with Simanta Mitra)

26. Jasmeet Singh, "Extract Class Refactoring by analyzing class variables", July 2013. (with Simanta Mitra)

27. Arvind Madhaven, "Semi Automated User Acceptance Testing using Natural Language Techniques", May 2014. (with Simanta Mitra)

28. Tim Garrett, "An initial matching and mapping for dense 3D object tracking in augmented reality applications", (with James Oliver as co-major advisor), May 2015.

29. Kishore-Kumar Kailainathan, "Integrated Release Planning with Agile Project Management – using Agilefant", May 2016.

30. Geethanjali Jeevanatham, "From User Stories to Software Architecture – a Function-Class Decomposition Approach", December 2018.

31. Han-Shu Chang, "Automatic threshold computation for traffic incident detection using INRIX", December 2019.

32. Mohammad (Shaiqur) Rahman, "ADL**2 – A Description Language for Activities of Daily Living", December 2020.

33. Wei Dong, "Using a system dynamics simulation model to explore the validity of dynamics of Agile software development ", May 2021.

III. M.S. Projects completed and in progress

At UIC I advised 150+ MS projects. At ISU I graduated the following MS students (Creative Component a.k.a. Project).

Hajeong (Lisa) Lim, "Tracking Of Parents (TOP) Project by Location Based Service", May 2014.

Yi Liang, "A Data Capture System for the Correlation between Emotion and Gesture", December 2015.

Yi Zhai, "Empower Agilefant", May 2017.

Tianxiang Gao, "Design and Construction of an EEG Data Collection and Analysis Platform", May 2017.

Renchang (Richard) Miao, "ADL Data Collector Implementation and Experimental Validation on iOS Platform", May 2017.

Minxian Li, "Activity Classification for User's Activities of Daily Living", May 2017.

Greeshma Padiri, "Differentiating Problem Solving Approaches for Contest Teams – a Brainwave Approach", May 2018.

Yongan Liao, "Immersive Intervention of Activities of Daily Living". December 2018.

Xinxin Yang, "A Scrum Decision Making Model", December 2018

Yan Deng, "Development of Emotion-Based Education Software", Dec. 2018

Weijia Zhao, "Real-Time Indoor Movement Animation System In 3D Environment", May, 2019

Vikas Jyoty, "HirePro: Aiding "Aging in Place" via Connecting Caregiver to Older Adults through Web Application", May 2019

Junteng Li, "ADL Data Capturing System: A Big Data Approach", July 2019

Meifang Chen, "Implementation and Usability Testing of a Cross-platform Mood-based Video Recommender System for Older Adults", May 2020

Umesh Maharshi Chinalachi, "Wireless Automatic Fall Detection System", May 2020

Yilin Wu, "An Indoor Bluetooth-Centric Proximity Based Positioning System", May 2020

Krishnan Subramanian, "Severe Weather Analysis Tool", May 2020

Jieyun Hu, "Deep Learning in Indoor Activities Recognition with Millimeter Wave Radar", June 2021

IV. M.S. Theses in progress

Mingdian Liu, "Deep Learning", expected May 2023.

V. Ph.D. Theses completed

Academic Advising at UIC:

1. Tsang Ming Jiang, ``Distributed Environments for the Development of Distributed Software'', August 1988 - tenured at University of Alaska - Fairbanks; on leave to 3COM; joined National Chung Cheng University, Taiwan

2. Young-Fu Chang, ``Analyses of Distributed Software Systems'', November 1989 - joined Lucent Technologies – Bell Labs

3. Hsuan-Wei Huang, ``On Modeling, Specifying, and Verifying the Real-Time Distributed Systems'', November 1990 - joined National Ocean University, Taiwan

4. Cheng-Chung Song, ``Stochastic Testing for Distributed Software Systems", March 1991 - joined IBM

5. Yong Liu, ``A Methodology for the Design, Simulation and Performance Engineering of Distributed Systems'', December 1993 – joined Motorola; moved to Lucent Technologies – Bell Labs

6. Yahya Al-Salqan, ``Mediaware: A Distributed Multimedia Environment Architecture and Formalism'', July 1994 - joined Sun Microsystems

7. Shiyan Hua, ``Middle-Software Generator: Towards Megaprogramming Software Design'', September 1994 - now with Lucent Technologies – Bell Labs

8. Chikuang Chao, ``SPMNET: A New Methodology For Software Management'', March 1995 - now with AT&T

9. Pattanasak Mongkolwat, ``Distributed Object-Oriented Software Process Modeling With Interoperable Objects and Object-Oriented Software Metrics'', finished at Illinois Institute of Technology, May 1996 and joined Northwestern Univ. now Dean at Mahidol University, Thailand.

10. Xin Shu, ``Fitting Design Patterns Into Object-Oriented Methods'', May 1996

11. Chiao-Chuan Shih, ``A Study Of Data Allocation For A Video-On-Demand Server'', December 1996 – joined Lucent Technologies – Bell Labs; joined Jasmine Networks; now Senior R&D Manager at VMWare.

12. Chia-Song Ma, ``Object-Oriented Software Testability via Interconnection Complexity Analysis'', March 1997 - now with Lucent Technologies – Bell Labs

13. Yi-Te Tseng, ``Process Algebra for Hard Real-Time Systems'', August 1997 - now with AT&T (co-advised with Ugo Buy)

14. Seongwoon Kim, "I$^{3:}$ A Petri Net Based Specification Method for Architectural Components", Jan 18, 2000 – was with Guidant; joined CISCO; moved to Lucent Technologies – Bell Labs; Senior Manager at Samsung Electronics; now VP at Hyundai Autoever.

15. Jia Zhang, "Formalization of Computer Supported Cooperative Work Applications", December 2000, joined Northern Illinois University; joined Carnegie-Mellon University West; joined Southern Methodist University.

16. Jane Huang, "Robust Requirements Traceability for Handling Evolutionary and Speculative Change", May 2002 – joined DePaul University; joined Norte Dame University - now department chair.

17. Lie Cai, "Agent Based Requirements Evolution over the Internet", September 2002 – joined Motorola

18. Hui Zhao, "A Fuzzy-Logic Based Enhancement on Routing in Mobile Ad-Hoc Networks", October, 2002.

19. Thribhuvana G. Murthy, "A Quality-centric Approach to Indentify and Integrate Legacy Assets Into a Platform Architecture", July 2003.

Academic Advising at ISU:

20. Tae-hyung Kim, "Service-oriented design in aspect-oriented and Petri net-based approach", May 2007 – joined Samsung Electronics.

21. Jinchun Xia, "WS-Pro: a Petri net based performance-driven service composition framework", May 2009 – joined San Jose State University; joined LinkedIn; now at Google.

22. Hsin-yi Jiang, "A Framework for Estimating the Applicability of GAs for Real-World Optimization Problems", November 2010 – joined Accelent; now with Microsoft.

23. Jose M. Reyes Alamo, "A Framework for safe composition of heterogeneous SOA services in a pervasive computing environment with resource constraints", November 2010. (Co-advised with Johnny Wong); now with New York Polytechnic.

24. Hojun Jaygarl, "Capture-Based Automated Test Input Generation", December 2010 – joined Samsung; now VP Hyundai Capital.

25. Shuxing Cheng, "Competitive Service Market: Modeling, Storage and Management", December 2010, now with Chevron.

26. Wei Zhang, "Data Clustering Analysis with Ant-based Template Mechanism", August 2011 – joined Microsoft.

27. Hua Ming, "SITU^f: A Domain Specific Language and A First Step Towards the Realization of *Situ* Framework", July 2012 – joined Oakland University, fall 2014.

28. Jeyoun Dong, "Human Desire Inference Process and Analysis", May 2013 - joined Samsung, Korea; now senior researcher ETRI.

29. Kai-shin Lu, " Automatic Refactoring History Reconstruction and Dynamic Component Adaptation Frameworks for Refactoring-based Software Component Evolution", May, 2013 - joined Peterson.

30. Mohammad Ali Darvish-Darab, "Automated Blackbox GUI Specifications Enhancement and Test Data Generatiuon", April 2015 – joined College of Charleston, South Carolina; moved to Johns Hopkins University in 2017.

31. Haihua Xie, "Detection of new intentions from users for software service evolution in human-centric context-aware environments using Conditional Random Fields", May 2015 – joined Founder Group, China.

32. Liyuan Xiao, "Intrusion Detection Using Probabilistic Graph Models", December 2016 – joined Sparta Systems, a Honeywell company.

33. Jingwei Yang, "A Situation-Centric Knowledge-Driven Requirements Elicitation Approach using the MTL Method", joined California State University – Sacramento, May 2017; now with Beijing Normal University-Hong Kong Baptist University United International College (UIC).

34. Yunfei (Phil) Feng, "Recognition of Activities of Daily Living", May 2018 – joined Walmart Global Technology.

35. Hoda Gholami, "A Data-Driven Situation_Aware Framework for Predictive Analysis in Smart Environments". May 2018 – joined Microsoft Research .

36. Omar Asiri, "Enhancing Users' Experiences with Mobile Apps' Stores; What Do Users See? What Should They See?" November 2018 – returned to Saudi Arabia as a professor at the University of Tabuk.

37. Nimanthi Atukorala, "Situation-Oriented Requirements Engineering", May 2019 – joined Augsburg University.

38. Olufayemi Oyeleke, "A Situation-Driven Framework for Relearning of Daily Living Activities in Smart Home Environments", May 2020 – joined Stevens Institute of Technology.

39. Peng Sun, "A Multi-layered Desires Based Framework to Detect Evolving Non-functional Requirements of Users", May 2020 – joined Fidelity Investment, now VP for Data Science and High-Performance Computing.

40. Chen-Yeou (Charles) Yu, "Situational Smart Edge Computing", June 2022 - joined Truman State University.

VI. Ph.D. Theses completed as major advisor per management plan with Endometric, Inc.

O1. Yi Wang, "Edge Cross-Section Profile for Colonoscopic Object Detection", May 2011. (Actual Thesis Advisor: Johnny Wong)

O2. Sean Stanek, "Semi-automated Parallel Programming in Heterogeneous Intelligent Reconfigurable Environment (SAPPHIRE)", May 2012. (Actual Thesis Advisor: Johnny Wong)

O3. Dong Ho Hong, "3D Colon Segment and Endoscope Motion Reconstruction from Colonoscopy Video", June 2012. (Actual Thesis Advisor: Wallapak Tavanapong)

VII. Ph.D. Theses complete/in progress as co-major professor per arrangements with Morris Chang

O4. Yu-Wen Chen, "The Cloud Based Energy Management: Design, Analysis and Realization", May 2017.

O5. Priyangika Rumesh Piyasinghe, "Data-driven Peer-to-Peer Botnet Detection in Waiting and Attacking Stages", May 2020.

VIII. Ph.D. Theses complete/in progress as co-major professor per arrangements with Stephen Gilbert

O6. Adel Sulaiman, "Training and evaluation in a large-scale virtual environment for a location-based mobile application", May 2019

IX. Ph.D. Theses in progress

Hongyi Bian, "Situational Smart Contract via Blockchain"

X. Committee Member for Other Faculty's Graduate Students

As a committee member for the following PhD students:

Name	Dept.	Major Professor	Degree/Year	Thesis Title
Shu-Hui H Chang	ABE A	Dr. Ruger Smith	PhD/Spring 2006	An Assessment of Effectiveness of Interaction in Distance Education Based on Student Satisfaction with the Learner-Centered Paradigm
Josh Jon Dehlinger	Com S	Dr. Robyn Lutz	PhD/Summer 2007	Incorporating product-line engineering techniques into agent-oriented software engineering for efficiently building safety-critical, multi-agent systems
Jing Liu	Com S	Dr. Robyn Lutz	PhD/Fall 2008	Safety analysis of software product lines using state based modeling and compositional model checking
Tian Xia	E CPE	Dr. Julie Dickerson	PhD/Spring 2010	Network modeling in systems biology
Hongyu Sun	Com S	Dr. Robyn Lutz	PhD/Fall 2010	Quantifiable non-functional requirements modeling and static verification for web service compositions
Ganesh Santhanam	Com S	Dr. Vasant Honavar	PhD/Fall 2010	Representing and Reasoning with Preferences for Compositional Systems
Jia Tao	Com S	Dr. Giora Slutzki	PhD/Spring 2012	Topics in Knowledge Bases: Epistemic Ontologies and Secrecy-preserving Reasoning
Chuang Wang	Com S	Dr. Wensheng Zhang	PhD/Fall 2012	Privacy and security protection in cloud integrated sensor networks
Taghreed Omar Salem Bagies	Com S	Dr. Jannesari Ali	May 2020	Parallelizing Unit Test Execution on the GPU

MS students served as a committee member

Name	Dept.	Major Professor	Graduate Year	Thesis Title
Oko Swai	Com S	Dr. Robyn Lutz	Fall 2004	Two Techniques for Preventing Domain Knowledge Transfer

				Problems in Requirements for High-confidence Software
Qian Feng	Com S	Dr. Ying Cai	Fall 2005	
Renish Palapetty	Com S	Dr. Johnny Wong	Fall 2009	An experimental study of the effectiveness of Panorama as a maintenance tool
Naga Bhagvanth Vattumalli	Com S	Dr. Simanta Mitra	Fall 2010	Panorama - a software maintenance tool
Yang Han	Com S	Dr. Simanta Mitra	Summer 2011	CodePad plug-in for Eclipse Environment
Fuchao Zhou	Com S	Dr. Johnny Wong	Fall 2011	Mobile personal health care system for patients with diabetes
Archit Saraf	Com S	Dr. Simanta Mitra	Summer 2012	Design and development of a tool to analyze and extract useful parts of code from open source projects
Chuan Jiang	Com S	Dr. Gianfranco Ciardo	January 2014	Efficient Satisfiability Solver
Prashanth Sampath Kumar	Com S	Dr. Simanta Mitra	Summer 2014	JAVADRAGDROP – A Visual Programming Editor for Java
Tim Garrett	VRAC	Dr. James Oliver	May 2015	Rigid Object Tracking Algorithms for Low-Cost AR Devices
Arko Basu	HCI	Dr. James Oliver	November 2017	Teleoperation of Remote Controlled Drones in a Physical Location Using Virtual Reality Interface
Subrahmanyam Vaddi	Com S	Dr. Jannesari Ali	May 2019	Efficient Object Detection Model for Real-Time UAV Applications

Appendix G-1. Grants/Awards History

Date		Requested		Funded	
Submitted	Title of Proposal	Agency or Board	Amount Rqst'd	Amount Funded	Period From - to
3/15/85	An Approach to Software Reuse	Campus Research Board	$10,000	$5,000	7/1/85-6/30/86
2/5/86	A New Approach to Distributed Software	FUJITSU	$240,000	$240,000	8/1/86-8/31/88
2/5/86	A New Approach to Distributed Software (Equipment)	College of Engineering	$50,000	$50,000	8/1/86-8/31/88
4/15/87	An Advanced Workstation Environment for Design Validation and Testing	Campus Research Board	$43,980	$14,000	9/1/87-6/30/88
1/19/88	A Validation and Verification System for Distributed Software	FUJITSU	$241,638	$241,638	9/1/88-8/31/90
4/1/90	Object-Oriented Software Development Paradigm and Hard Real-Time Systems	FUJITSU	$254,000	$254,000	9/1/90-8/31/92
10/28/91	AT&T Equipment Donation	AT&T	$55,000	$55,000	10/28/91
4/1/92	Visual Software Engineering	FUJITSU	$276,000	$276,000	9/1/92-8/31/94
1/15/92	Intelligent Real Time Control	CORELIS Technologie	$50,000	$50,000	2/1/93-1/31/94
1/3/94	Gift	Infinitech	$18,000	$18,000	N/A
4/1/94	OO Software Engineering for Real-Time Distributed Systems	FUJITSU	$276,000	$276,000	8/15/94-8/14/96
1/4/96	Metrics Archaeology	Northrop	$5,000	$5,000	N/A
4/1/96	Visualization for Software Engineering and Video on Demand	FUJITSU	$399,800	$399,800	8/15/96-8/14/98
4/30/00	Computing Curricula 2001 Workshop	NSF	$35,000	$35,000	6/1/00-5/30/01
9/25/00	Traceability Based Dynamic Metrics as Tool Evaluating Partitioning Decisions in Object-Oriented Architecture (as PI; transferred from UIC to ISU)	NSF	$318,249	$200,000	6/01/01 – 05/31/03 (extended - 5/31/04)
3/17/06	IBM Faculty Award	IBM	$30,000	$30,000	continuous
3/14/07	IBM Faculty Award	IBM	$20,000	$20,000	continuous
8/14/08	Travel Grant Support for IEEE COMPSAC 2008 (as PI, with Simanta Mitra)	NSF	$14,400	$14,400	11/1/08-10/30/09
3/6/09	IBM Faculty Award	IBM	$15,000	$15,000	continuous

4/27/09	CPATH-I: Experimenting with an Open Platform for the New Interdisciplinary Study on Gerotechnology (as PI, with Johnny Wong, Peter Martin, Mack Shelley, Simanta Mitra)	NSF	$300,000	$300,000	9/1/09-8/31/12
11/9/16	Innovation, Technology & Entrepreneurship (as Co-PI)	Venture Well Association	$30,000	$23,400	03/01/17-8/31/20
10/19/17	Promoting everyday physical activity, movement, and independence through technology and rural community engagement (a center proposal)	NIH (P 30 Claude Pepper OAIC)	$6,090,971 (my portion is $1,670,649 as Co-PI for GeronTech)	Denied	7/1/18-6/30/23
6/6/18	Aging-Centric Engineering Technologies Center Planning Grant (as a Co-PI)	NSF	$100,000	$100,000	8/15/18
1/16/19	Engineering Research Center (ERC): Engineering and Aging (participated in pre-proposal development)	NSF	$0 for pre-proposal	Denied	-
6/2/19	Science and Technology Center: Integrative Partnerships (participated in pre-proposal)	NSF	$0 for pre-proposal	$0 for pre-proposal	10/31/19: Invited for full proposal
1/27/20	Science and Technology Center (STC): Science and Technology of Aging (STAGE)/: Integrative Partnerships (participated in the development of full proposal)	NSF	$5M annual	Denied	8/15/21 – 8/14/26
10/2/20	ERC: Engineering and Aging (participated in pre-proposal development - resubmission)	NSF	$0 for pre-proposal	$0 for pre-proposal	-