

Qi Yu

Curriculum Vitae

February 2021

Address: School of Information, RIT, NY 14623

Phone: 585-475-6929

Email: qi.yu@rit.edu

WWW: <http://mining.rit.edu/>

RESEARCH INTEREST

Machine learning and data mining [h-index: 26; i10-index:54]

EDUCATION

Virginia Tech Ph. D. in Computer Science Dissertation: Foundational Framework for Service Query Optimization	Blacksburg, VA <i>August 2008</i>
National University of Singapore M. E. in Computer Engineering Thesis: Intelligent Data Mining via Evolutionary Computing	Singapore <i>July 2003</i>
Zhejiang University B. E. in Electrical Engineering	Hangzhou, China <i>July 2001</i>

EMPLOYMENT

Professor and Graduate Program Director School of Information Rochester Institute of Technology, Rochester NY	August 2020 –
Associate Professor and Graduate Program Director School of Information Rochester Institute of Technology, Rochester NY	August 2014 – July 2020
Assistant Professor Department of Information Sciences and Technologies Rochester Institute of Technology, Rochester NY	Sep 2008 - July 2014
Research Assistant Department of Computer Science Virginia Tech, Blacksburg VA	Sep 2003 - Jul 2008
Summer Intern Emerging Technology Team IBM Software Group, Austin TX	May - August 2007
Research Intern Bosch Research, Palo Alto CA	May - August 2006
Research Assistant Department of Electrical and Computer Engineering National University of Singapore, Singapore	July 2001 - July 2003

SCIENTIFIC AND PROFESSIONAL SOCIETIES MEMBERSHIPS

- Member of IEEE
- Member of IEEE Computer Society

RESEARCH GRANTS (>\$2 Million external funding as the PI)

- A Multimodal Dynamic Bayesian Learning Framework for Complex Decision-making, DoD/ONR, role: PI (Co-PI: Daniel Krutz), \$1,586,800, October 2018- September 2022.
- Utilizing synergy between human and computer information processing for complex visual information organization and use, NSF IIS, role: PI (Co-PIs: A. Haake, P. Shi, and R. Li) \$497,424.00, July 2018- June 2021.
- Dynamic Recommendation Through Time-Evolving and Time-Specific Collaborative Filtering, GCCIS Seed Funding, role: PI, \$10,000, January 2018-December 2018.
- Multi-Class Active Learning for Cost-Effective Usage of Human Expertise in Supervised Learning, GCCIS Seed Funding, role: PI, \$15,000, January 2017-December 2017.
- NSF REU Site: Computational Sensing, role: senior personnel, (PI: C. Alm), \$359,512, April 2016-March 2019.
- Mining Heterogeneous, Complex, and Evolving Electronic Health Records for Early Dementia Detection, GCCIS Kodak Endowed Chairs Award, role: PI, \$50,000, October 2014-September 2015.

PUBLICATIONS

Book

- B.1. **Q. Yu** and A. Bouguettaya, *Foundations for Efficient Web Service Selection*, Springer-Verlag, ISBN: 978-1-4419-0313-6, August 2009.

Edited Conference Proceedings

- E.1. S. Yangui, A. Bouguettaya, X. Xue, N. Faci, W. Gaaloul, **Q. Yu**, Z. Zhou, N. Hernandez, E. Nakagawa: Service-Oriented Computing - ICSOC 2019 Workshops - WESOACS, ASOCA, ISYCC, TBCE, and STRAPS, Toulouse, France, October 28-31, 2019, Revised Selected Papers. Lecture Notes in Computer Science 12019, Springer 2020, ISBN 978-3-030-45988-8.
- E.2. X. Liu, M. Mrissa, L. Zhang, D. Benslimane, A. Ghose, Z. Wang, A. Bucchiarone, W. Zhang, Y. Zou, and **Qi Yu**: Service-Oriented Computing - ICSOC 2018 Workshops - ADMS, ASOCA, ISYyCC, CloTS, DDBS, and NLS4IoT, Hangzhou, China, November 12-15, 2018, Revised Selected Papers. Lecture Notes in Computer Science 11434, Springer 2019, ISBN 978-3-030-17641-9.
- E.3. C. Pahl, M. Vukovic, J. Yin, and **Qi Yu**: *Service-Oriented Computing - 16th International Conference, ICSOC 2018, Hangzhou, China, November 12-15, 2018, Proceedings*, Lecture Notes in Computer Science 11236, Springer 2018.
- E.4. K. Drira, H. Wang, **Q. Yu**, Y. Wang, Y. Yan, F. Charoy, J. Mendling, M. Mohamed, Z. Wang, S. Bhiri (Eds.) *Service-Oriented Computing - ICSOC 2016 Workshops - ASOCA, ISyCC, BSCI, and Satellite Events, Banff, AB, Canada, October 10-13, 2016. Revised Selected Papers. Lecture Notes in Computer Science 10380, Springer 2017, ISBN 978-3-319-68135-1.*
- E.5. C.Liu, H. Ludwig, F. Toumani, and **Q. Yu** (Eds.), *10th International Conference, ICSOC 2012 Shanghai, China, November 12-15, 2012 Proceedings*, Springer-Verlag, ISBN: 978-3-642-34320-9.
- E.6. A. Ghose, H. Zhu, **Q. Yu**, A. Delis, Q. Sheng, O. Perrin, J. Wang, and Y. Wang (Eds.), *ICSOC 2012, International Workshops ASC, DISA, PAASC, SCEB, SeMaPS, WESOA, and Satellite Events, Shanghai, China, November 12-15, 2012, Revised Selected Papers*, Springer-Verlag, ISBN: 978-3-642-37803-4.

Journals

- J.1. M. Alshangiti, W. Shi, X. Liu, **Q. Yu**: A Bayesian learning model for design-phase service mashup popularity prediction. *Expert Systems with Applications* 149: 113231 (2020).

- J.2. H. Wang, J. Li, **Q. Yu**, T. Hong, J. Yan, W. Zhao: Integrating recurrent neural networks and reinforcement learning for dynamic service composition. *Future Generation Computing Systems*, 107: 551-563 (2020).
- J.3. H. Wang, X. Hu, **Q. Yu**, M. Gu, W. Zhao, J. Yan, T. Hong: Integrating reinforcement learning and skyline computing for adaptive service composition. *Information Sciences*, 519: 141-160 (2020).
- J.4. Peng-Nien Yin, Kishan KC, Weishi Shi, **Qi Yu**, Rui Li, Anne R. Haake, Hiroshi Miyamoto, Feng Cui: Histopathological distinction of non-invasive and invasive bladder cancers using machine learning approaches. *BMC Medical Informatics & Decision Making* 20(1): 162 (2020).
- J.5. E. Lima, W. Shi, X. Liu, and **Q. Yu**, 2019. Integrating Multi-level Tag Recommendation with External Knowledge Bases for Automatic Question Answering. *ACM Trans. Internet Technol.* 19, 3, Article 34 (May 2019), 22 pages.
- J.6. H. Wang, C. Yu, L. Wang, **Q. Yu**, and Z. Zheng, Learning the Evolution Regularities for BigService-oriented Online Reliability Prediction, *IEEE Transactions on Services Computing (TSC)*, 12 (3): 398-411, 2019.
- J.7. H. Wang, S. Peng, **Q. Yu**: A parallel refined probabilistic approach for QoS-aware service composition. *Future Generation Computer Systems* 98: 609-626 (2019)
- J.8. H. Wang, H. Fei, **Q. Yu**, W. Zhao, J. Yan, T. Hong: A motifs-based Maximum Entropy Markov Model for realtime reliability prediction in System of Systems, *Journal of Systems and Software* 151, 180-193 (2019)
- J.9. H. Wang, Y. Tao, **Q. Yu**, T. Hong, C. Xin, Q. Wu: Personalized service selection using Conditional Preference Networks. *Knowledge Based Systems* 164: 292-308 (2019)
- J.10. H. Wang, M. Gu, **Q. Yu**, Y. Tao, J. Li, H. Fei, J. Yan, W. Zhao, and T. Hong: Adaptive and large-scale service composition based on deep reinforcement learning. *Knowl.-Based Syst.* 180: 75-90 (2019)
- J.11. KC Kishan, R. Li, F. Cui, **Q. Yu**, A. R. Haake: GNE: a deep learning framework for gene network inference by aggregating biological information. *BMC Systems Biology* 13(2): 38:1-38:14 (2019)
- J.12. M. Zheng, G. Y. Kondo, S. Zilora, and **Q. Yu**, Tag-Aware Dynamic Music Recommendation, *Expert Systems with Applications*, 106: 244-251, 2018.
- J.13. H. Wang, C. Yu, L. Wang, and **Qi Yu**: Effective BigData-Space Service Selection over Trust and Heterogeneous QoS Preferences. *IEEE Trans. Services Computing* 11(4): 644-657 (2018)
- J.14. X. Liu, M. Alshangiti, C. Ding, and **Q. Yu**: Log sequence clustering for workflow mining in multi-workflow systems. *Data & Knowledge Engineering*, 117: 1-17 (2018)
- J.15. H. Wang, Y. Tao, **Q. Yu**, X. Lin, and T. Hong, Incorporating both qualitative and quantitative preferences for service recommendation, *Journal of Parallel Distributed Computing*, 114: 46-69 (2018).
- J.16. H. Wang, L. Wang, **Q. Yu**, Z. Zheng, and Z. Yang, A proactive approach based on online reliability prediction for adaptation of service-oriented systems. *Journal of Parallel Distributed Computing* 114: 70-84 (2018)
- J.17. H. Wang, D. Yang, **Q. Yu**, and Y. Tao, Integrating modified cuckoo algorithm and credibility evaluation for QoS-aware service composition. *Knowledge Based Systems*, 140: 64-81 (2018).
- J.18. H. Wang, Z. Yang, **Q. Yu**, T. Hong, and X. Lin: Online reliability time series prediction via convolutional neural network and long short term memory for service-oriented systems. *Knowledge Based Systems*, 159: 132-147 (2018)

- J.19. X. Liu, W. Shi, A. Kale, C. Ding, and **Q. Yu**, Statistical Learning of Domain-Specific Quality-of-Service Features from User Reviews, *ACM Trans. Internet Techn. (TOIT)*, 17(2): 22:1-22:24 (2017).
- J.20. Bouguettaya, A., Singh, M., Huhns, M., Sheng, Q.Z., Dong, H., **Yu, Q.**, Neiat, A.G., Mistry, S., Benatallah, B., Medjahed, B., Ouzzani, M., Casati, F., Liu, X., Wang, H., Georgakopoulos, D., Chen, L., Nepal, S., Malik, Z., Erradi, A., Wang, Y., Blake, B., Dustdar, S., Leymann, F., Papazoglou, M., A Service Computing Manifesto: The Next Ten Years, *Communications of the ACM (CACM)*, 60(4): 64-72, 2017.
- J.21. H. Wang, L. Wang, X. Chen, Q. Wu, **Q. Yu**, X. Hu, Z. Zheng, and A. Bouguettaya Integrating Reinforcement Learning with Multi-Agent Techniques for Adaptive Service Composition, *ACM Transactions on Autonomous and Adaptive Systems (TAAS)*, 2(2): 8:1-8:42 (2017).
- J.22. H. Wang, P. Ma, **Q. Yu**, D. Yang, J. Li, and H. Fei: Combining quantitative constraints with qualitative preferences for effective non-functional properties-aware service composition. *J. Parallel Distributed Computing* 100: 71-84 (2017).
- J.23. H. Wang, L. Wang, **Q. Yu**, Z. Zheng, A. Bouguettaya, and M. Lyu Online Reliability Prediction via Motifs-based Dynamic Bayesian Networks for Service-Oriented Systems, *IEEE Transactions on Software Engineering (TSE)*, 43(6): 556-579 (2017).
- J.24. M. Sheng, A. Vasilakos, **Q. Yu**, and L. Yao: Guest Editorial: Big Data Analytics and the Web. *IEEE Trans. Big Data*, 2(3): 189 (2016)
- J.25. X. Guo, **Q. Yu**, R. Li, C. Alm, C. Calvelli, P. Shi, and A. Haake, Intelligent Medical Image Grouping through Interactive Learning , *International Journal of Data Science and Analytics (JDSA)*, 2(3-4): 95-105 (2016)
- J.26. H. Wang, X. Wang, X. Zhang, **Q. Yu**, X. Hu: Effective service composition using multi-agent reinforcement learning. *Knowledge Based Systems* 92: 151-168 (2016)
- J.27. **Q. Yu**, CloudRec: A Framework for Personalized Service Recommendation in the Cloud, *Knowledge and Information Systems (KAIS)*, vol. 43, no. 2, pp. 417-443, 2015,
- J.28. A. Bouguettaya, **Q. Yu**, X. Liu, X. Zhou, A. Song, Efficient agglomerative hierarchical clustering. *Expert Systems with Applications* 42(5): 2785-2797, 2015.
- J.29. J. Wu, L. Chen, **Q. Yu**, P. Han, and Z. Wu, Trust-aware media recommendation in heterogeneous social networks. *World Wide Web* 18(1): 139-157, 2015.
- J.30. X. Guo, **Q. Yu**, C. Alm, C. Calvelli, J. Pelz, P. Shi, and A. Haake, From spoken narratives to domain knowledge: Mining linguistic data for medical image understanding , *International Journal of Artificial Intelligence in Medicine (AIIM)*, vol. 62, no. 2, pp. 79-90, 2014.
- J.31. X. Chen, Z. Zheng, **Q. Yu**, and M. Lyu, Web Service Recommendation via Exploiting Location and QoS Information, *IEEE Transactions on Parallel and Distributed Systems (TPDS)*, vol. 25, no. 7, pp. 1913-1924, 2014.
- J.32. **Q. Yu**, QoS-aware Service Selection via Collaborative QoS Evaluation, *World Wide Web Journal (WWWJ)*, vol. 14, no. 1, pp. 33-57, 2014.
- J.33. **Q. Yu**, Efficient Large-scale Service Clustering via Sparse Functional Representation and Accelerated Optimization, *International Journal of Cooperative Information Systems (IJCIS)*, vol. 22, no. 4, 2013.
- J.34. J. Wu, L. Chen, **Q. Yu**, L. Kuang, and Y. Wang, Z. Wu, Selecting Skyline Services for QoS-aware Composition by Upgrading MapReduce Paradigm, *Cluster Computing*, vol. 16, no. 4, pp 693-706, 2013.
- J.35. P. Andhale, M. Rege, and **Q. Yu**, Discovering Heterogeneous Evolving Web Service Communities Using Semi-Supervised Non Negative Matrix Factorization, *International Journal of Machine Learning and Computing (IJMLC)*, vol. 3, No. 2, 2013.

- J.36. **Q. Yu** and A. Bouguettaya, Efficient Service Skyline Computation for Composite Service Selection, *IEEE Transactions on Knowledge and Data Engineering (TKDE)*, IEEE, vol. 25, No. 4, 2013.
- J.37. **Q. Yu** and J. Kang, Integrating User Invocation Data and Extended Semantics for Service Community Discovery, *International Journal of Next-Generation Computing (IJNGC)*, vol. 3, no. 2, 2012.
- J.38. **Q. Yu** and A. Bouguettaya, Multi-Attribute Optimization in Service Selection, *World Wide Web Journal (WWWJ)*, Springer, vol. 15, no. 1, 2012.
- J.39. A. Bouguettaya, **Q. Yu**, X. Liu, Z. Malik, Service-centric Framework for a Digital Government Application, *IEEE Transactions on Services Computing (TSC)*, IEEE, vol. 4, no.1, pp. 3-16, 2011.
- J.40. K. Xu, **Q. Yu**, Q. Li, J. Zhang, and A. Bouguettaya, Web Service Management System for Bioinformatics Research: A Case Study, *Service Oriented Computing and Applications (SOCA)*, Springer, vol. 5, no. 1, pp. 1-15, 2011.
- J.41. X. Liu, A. Bouguettaya, **Q. Yu**, and Z. Malik, Efficient Change Management in Long Term Composed Services, *Service Oriented Computing and Applications (SOCA)*, Springer, vol. 5, no. 2, pp. 87-103, 2011.
- J.42. **Q. Yu** and A. Bouguettaya, Computing Service Skyline from Uncertain QoWS, *IEEE Transactions on Services Computing (TSC)*, IEEE, vol. 3, no.1, pp. 17-29, 2010.
- J.43. **Q. Yu** and A. Bouguettaya, Special Section on Query Models and Efficient Selection of Web Services, *IEEE Transactions on Services Computing (TSC)*, IEEE, vol. 3, no.3, pp. 161-162, 2010.
- J.44. **Q. Yu**, M. Rege, A. Bouguettaya, B. Medjahed, and M. Ouzzani, A Two-phase Framework for Quality-aware Web Service Selection, *Service Oriented Computing and Applications (SOCA)*, vol. 4, no. 2, pp. 63-79, 2010.
- J.45. K. C. Tan, E. J. Teoh, **Q. Yu** and K. C. Goh, A hybrid evolutionary algorithm for attribute selection in data mining, *Expert Systems With Applications: An International Journal*, Elsevier, vol. 36, no. 4, 2009.
- J.46. M. Rege and **Q. Yu**, Efficient Mining of Heterogeneous Star-structured Data, *International Journal of Software and Informatics*, Chinese Academy of Sciences, vol. 2, no. 2, pp. 141-161, 2008.
- J.47. **Q. Yu** and A. Bouguettaya, Framework for Web Service Query Algebra and Optimization, *ACM Transactions on the Web (TWEB)*, ACM Press, vol. 2, no. 1, pp. 1-35, 2008.
- J.48. **Q. Yu**, X. Liu, A. Bouguettaya, and B. Medjahed, Deploying and Managing Web Services: Issues, Solutions, and Directions, *International Journal on Very Large Data Bases (VLDB Journal)*, Springer, vol. 17, no. 3, pp. 537-572, 2008.
- J.49. K. C. Tan, **Q. Yu**, and J. H. Ang, A dual-objective evolutionary algorithm for rules extraction in data mining, *Computational Optimization and Applications*, Springer, vol. 34, pp. 273-294, 2006.
- J.50. K. C. Tan, **Q. Yu**, J. H. Ang, and T. H. Lee, A coevolutionary algorithm for rules discovery in data mining, *International Journal of Systems Science*, Taylor & Francis, vol. 37, no. 12, pp. 835-864, 2006.
- J.51. K. C. Tan, **Q. Yu**, and T. H. Lee, A distributed coevolutionary classifier for knowledge discovery in data mining, *IEEE Transactions on Systems, Man and Cybernetics: Part C (Applications and Reviews)*, IEEE, vol. 35, no. 2, pp. 131-142, 2005.
- J.52. K. C. Tan, **Q. Yu**, C. M. Heng, and T. H. Lee, Evolutionary computing for knowledge discovery in medical diagnosis, *Artificial Intelligence in Medicine*, Elsevier, vol. 27, no. 2, pp. 129-154, 2003.

Book Chapters

- T.1. S. Naik and **Q. Yu**, Evolutionary Influence Maximization in Viral Marketing, *Recommendation and Search in Social Networks*, New York, NY: Springer, 2015. pp. 217-247.

- T.2. **Q. Yu**, On bootstrapping web service recommendation, *Web Services Foundations*, pp. 589-608, Springer, 2014.
- T.3. A. Knight, **Q. Yu**, and M. Rege, Efficient Range Query Processing on Complicated Uncertain Data, *Information Reuse and Integration in Academia and Industry*, Springer, 2013.
- T.4. A. Bouguettaya and **Q. Yu**, Clustering Analysis of Data with High Dimensionality, *Encyclopedia of Data Warehousing and Mining - 2nd Edition*, Idea Group Publishing, pp. 237-245, 2008.
- T.5. **Q. Yu**, K. C. Tan, and T. H. Lee, An evolutionary algorithm for rules discovery in data mining, *Evolutionary Computation in Data Mining*, A. Ghosh and L. C. Jain (Eds.), Physica-Verlag, Germany, pp. 101-123, 2005.

Conferences

- C.1. Hitesh Sapkota, Yiming Ying, Feng Chen, **Qi Yu**: Distributionally Robust Optimization for Deep Kernel Multiple Instance Learning. AISTATS 2021.
- C.2. Weishi Shi and **Qi Yu**: Active Learning with Maximum Margin Sparse Gaussian Processes. AISTATS 2021.
- C.3. Ervine Zheng, **Qi Yu**, Rui Li, Pengcheng Shi, Anne R. Haake: A Continual Learning Framework for Uncertainty-Aware Interactive Image Segmentation. AAAI 2021.
- C.4. Weishi Shi, Xujiang Zhao, Feng Chen, **Qi Yu**: Multifaceted Uncertainty Estimation for Label-Efficient Deep Learning. NeurIPS 2020.
- C.5. Ervine Zheng, **Qi Yu**, Rui Li, Pengcheng Shi, Anne R. Haake: Dynamic Fusion of Eye Movement Data and Verbal Narrations in Knowledge-rich Domains. NeurIPS 2020.
- C.6. Wentao Bao, **Qi Yu**, Yu Kong: Uncertainty-based Traffic Accident Anticipation with Spatio-Temporal Relational Learning. ACM Multimedia 2020: 2682-2690.
- C.7. Wentao Bao, **Qi Yu**, Yu Kong. Object-Aware Centroid Voting for Monocular 3D Object Detection. IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2020.
- C.8. Yasmine N. El-Glaly, Weishi Shi, Samuel A. Malachowsky, **Qi Yu**, Daniel E. Krutz: Presenting and evaluating the impact of experiential learning in computing accessibility education. ICSE (SEET) 2020: 49-60. (Distinguished paper award).
- C.9. Weishi Shi, Saad Khan, Yasmine N. El-Glaly, Samuel A. Malachowsky, **Qi Yu**, Daniel E. Krutz: Experiential learning in computing accessibility education. ICSE (Companion Volume) 2020: 250-251.
- C.10. Jai W. Kang, **Qi Yu**, Edward P. Holden, Erik Golen, Michael McQuaid: Analytics Prevalent Undergraduate IT Program. SIGITE 2020: 26-31
- C.11. W. Shi and **Q. Yu**, Integrating Generative and Discriminative Sparse Kernel Machines for Multi-class Active Learning. NeurIPS 2019: 2282-2291.
- C.12. W. Shi and **Q. Yu**, Fast Direct Search in an Optimally Compressed Continuous Target Space for Efficient Multi-Label Active Learning. ICML 2019: 5769-5778.
- C.13. M. Alshangiti, H. Sapkota, P. Murukannaiah, X. Liu, and **Q. Yu**, Why is Developing Machine Learning Applications Challenging? A Study on Stack Overflow Posts, ACM/IEEE International Symposium on Empirical Software Engineering and Measurement (ESEM), 2019, Accepted.
- C.14. J. Palmerino, **Q. Yu**, T. Desell, and D. Krutz, Improving the Decision-Making Process of Self-Adaptive Systems by Accounting for Tactic Volatility, 34th IEEE/ACM International Conference on Automated Software Engineering (ASE) 2019, 13 pages, Accepted.
- C.15. J. Kang, **Qi Yu**, E. Holden, X. Liu: Complementing Course Contents Between IT/CS: A Case Study on Database Courses. SIGITE 2019: 10-15.

- C.16. W. Shi, and **Q. Yu**, An Efficient Many-Class Active Learning Framework for Knowledge-Rich Domains, IEEE International Conference on Data Mining (ICDM) 2018: 1230-1235
- C.17. J. W. Kang, **Q. Yu**, E. Golen, and E. P. Holden: IT Curriculum: Coping with Technology Trends & Industry Demands. SIGITE 2018: 44-49. (Best paper award)
- C.18. X. Guo, R. Li, **Q. Yu**, and A. Haake Modeling Physicians' Utterances to Explore Diagnostic Decision-making , International Joint Conference on Artificial Intelligence (IJCAI), 2017: 3700-3706 (Acceptance rate: 25%).
- C.19. W. Shi, X. Liu, and **Q. Yu**, Correlation-Aware Multi-Label Active Learning for Web Service Tag Recommendation , IEEE International Conference on Web Services (ICWS), Honolulu, HI, 2017 (Research Track: 21%): 229-236.
- C.20. H. Wang, Z. Yang, and **Q. Yu**, Online Reliability Prediction via Long Short Term Memory for Service-Oriented Systems , IEEE International Conference on Web Services (ICWS), Honolulu, HI, 2017 (Research Track: 21%): 81-88.
- C.21. S. Peng, H. Wang, and **Q. Yu**, Estimation of Distribution with Restricted Boltzmann Machine for Adaptive Service Composition , IEEE International Conference on Web Services (ICWS), Honolulu, HI, 2017 (Research Track: 21%): 114-121.
- C.22. H. Wang, M. Gu, **Q. Yu**, H. Fei, J. Li, Y. Tao, Large-Scale and Adaptive Service Composition Using Deep Reinforcement Learning. 14th International Conference on Service Oriented Computing (ICSOC 2017), Malaga, Spain 2017: 383-391.
- C.23. X. Liu, S. Argwal, C. Ding, and **Q. Yu**, A LDA-SVM Active Learning Framework for Web Service Classification , IEEE International Conference on Web Services (ICWS), San Francisco, 2016 (Research Track: 13%).
- C.24. H. Wang, G. Huang, and **Q. Yu**, Automatic Hierarchical Reinforcement Learning for Efficient Large-scale Service Composition , IEEE International Conference on Web Services (ICWS), San Francisco, 2016 (Research Track: 13%).
- C.25. H. Wang, X. Zhang, and **Q. Yu**, Integrating POMDP and SARSA(?) for Service Composition with Incomplete Information, 13th International Conference on Service Oriented Computing (ICSOC 2016), Alberta, Canada, 2016 (Short research paper).
- C.26. Y. Wan, L. Chen, **Q. Yu**, T. Liang, and J. Wu, Incorporating Heterogeneous Information for Mashup Discovery with Consistent Regularization , 20th Pacific-Asia Conference on Knowledge Discovery and Data Mining (PAKDD), Auckland, New Zealand, 2016.
- C.27. X. Guo, **Q. Yu**, R. Li, C. Alm, C. Calvelli, P. Shi, and A. Haake, An Expert-in-the-loop Paradigm for Learning Medical Image Grouping , 20th Pacific-Asia Conference on Knowledge Discovery and Data Mining (PAKDD), Auckland, New Zealand, 2016.
- C.28. A. Jain, X. Liu, and **Q. Yu**, Aggregating Functionality, Use History, and Popularity of APIs to Recommend Mashup Creation, 12th International Conference on Service Oriented Computing (ICSOC 2015), Goa India, 2015, pp. 188-202 (Full research paper: 16%).
- C.29. H. Wang, Q. Wu, and X. Chen, and **Q. Yu**, Integrating Gaussian Process with Reinforcement Learning for Adaptive Service Composition, 12th International Conference on Service Oriented Computing (ICSOC 2015), Goa India, 2015, pp. 203-217, (Full research paper: 16%).
- C.30. **Q. Yu**, H. Wang, and L. Chen, Learning Sparse Functional Factors for Large-scale Service Clustering, IEEE International Conference on Web Services (ICWS), New York, 2015, pp. 201-208, (Research Track: 17.4%).
- C.31. L. Chen, **Q. Yu**, and J. Wu, WS-HFS: A Heterogenous Feature Selection Framework for Web Services Mining, IEEE International Conference on Web Services (ICWS), New York, 2015, pp. 193-200, (Research Track: 17.4%).

- C.32. X. Liu, A. Kale, J. Wasani, C. Ding, and **Q. Yu**, Extracting, Ranking, and Evaluating Quality Features of Web Services through User Review Sentiment Analysis, *IEEE International Conference on Web Services (ICWS)*, New York, 2015, pp. 153-160, (Research Track: 17.4%).
- C.33. W. Yao, L. Chen, J. Wu, and **Q. Yu**, Time-aware API Popularity Prediction via Heterogeneous Features, *IEEE International Conference on Web Services (ICWS)*, New York, 2015, pp. 424-431, (Application Track: 21.9%).
- C.34. H. Wang, S. Zhou, and **Q. Yu**, Requirement Decomposition Through Service Discovery, *IEEE International Conference on Web Services (ICWS)*, New York, 2015, pp. 743-746, (Short Paper Track).
- C.35. J. Bullard, R. Murde, **Q. Yu**, C. Alm, and R. Proano: Inference from Structured and Unstructured Electronic Medical Data for Dementia Detection. 14th *INFORMS Computing Society Conference* Richmond, Virginia, January 11-13, 2015, 236-244.
- C.36. Joseph Bullard, Cecilia Ovesdotter Alm, **Qi Yu**, Pengcheng Shi, Anne R. Haake: Towards multimodal modeling of physicians' diagnostic confidence and self-awareness using medical narratives. *COLING 2014*: 1718-1727
- C.37. Xuan Guo, Rui Li, Cecilia Ovesdotter Alm, **Qi Yu**, Jeff B. Pelz, Pengcheng Shi, Anne R. Haake: Infusing perceptual expertise and domain knowledge into a human-centered image retrieval system: a prototype application. *ETRA 2014*: 275-278
- C.38. Xuan Guo, **Qi Yu**, Rui Li, Cecilia Ovesdotter Alm, Anne R. Haake: Fusing Multimodal Human Expert Data to Uncover Hidden Semantics. *GazeIn@ICMI 2014*: 21-26
- C.39. Hongbing Wang, Xin Chen, Qin Wu, **Qi Yu**, Zibin Zheng, Athman Bouguettaya: Integrating On-policy Reinforcement Learning with Multi-agent Techniques for Adaptive Service Composition. *ICSOC 2014*: 154-168 (Acceptance rate: 15%).
- C.40. Hongbing Wang, Qin Wu, Xin Chen, **Qi Yu**, Zibin Zheng, Athman Bouguettaya: Adaptive and Dynamic Service Composition via Multi-agent Reinforcement Learning. *ICWS 2014*: 447-454
- C.41. Hongbing Wang, Lei Wang, **Qi Yu**, Zibin Zheng: A Novel Online Reliability Prediction Approach for Service-Oriented Systems. *ICWS 2014*: 582-589
- C.42. **Q. Yu**, Z. Zheng, and H. Wang Trace Norm Regularized Matrix Factorization for Service Recommendation, *IEEE International Conference on Web Services (ICWS 2013)*, Santa Clara CA, 2013 (Acceptance rate 19%).
- C.43. L. Chen, Y. Wang, **Q. Yu**, Z. Zheng, and J. Wu, WT-LDA: User Tagging Augmented LDA for Web Service Clustering, *11th International Conference on Service Oriented Computing (ICSOC 2013)*, Berlin, Germany, 2013 (Acceptance rate 13%).
- C.44. L. Wang, H. Wang, **Q. Yu**, H. Sun, and A. Bouguettaya, Online Reliability Time Series Prediction for Service-Oriented System of Systems, *11th International Conference on Service Oriented Computing (ICSOC 2013)*, Berlin, Germany, 2013 (Short paper, acceptance rate 22%).
- C.45. H. Wang, X. Sun, and **Q. Yu** Reliable Service Composition via Automatic QoS Prediction, *10th IEEE International Conference on Services Computing (SCC 2013)*, Santa Clara CA, 2013.
- C.46. H. Wang, X. Wang, and **Q. Yu** Optimal Self-Healing of Service-Oriented Systems with Incomplete Information, *IEEE Big Data Congress*, Santa Clara CA, 2013.
- C.47. S. Naik, **Q. Yu**, Evolutionary User Selection to Maximize the Influence of Viral Marketing, *The IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining (ASONAM)*, Niagara Falls, Ontario, Canada, 2013 (Poster, acceptance rate 36%).
- C.48. **Q. Yu**, Sparse Functional Representation for Large-scale Service Clustering, *10th International Conference on Service Oriented Computing (ICSOC 2012)*, Shanghai, China, 2012 (Acceptance rate 17%).

- C.49. **Q. Yu**, Decision Tree Learning from Incomplete QoS to Bootstrap Service Recommendation, *IEEE International Conference on Web Services (ICWS)*, Honolulu Hawaii, 2012 (Acceptance rate 17%).
- C.50. **Q. Yu**, Place Semantics into Context: Service Community Discovery from the WSDL Corpus, *9th International Conference on Service Oriented Computing, ICSOC 2011*, Cyprus, 2011 (Acceptance rate 16%).
- C.51. A. Knight, **Q. Yu**, M. Rege, Efficient range query processing on uncertain data, *IEEE International Conference on Information Reuse and Integration, IRI 2011*, Las Vegas, Nevada, 2011 (An extended version has been invited to submit to Information Reuse and Integration in Academia and Industry, Springer).
- C.52. **Q. Yu** and M. Rege, On Service Community Learning: A Co-Clustering Approach, *IEEE International Conference on Web Services (ICWS)*, Miami FL, 2010 (Acceptance rate 17%).
- C.53. **Q. Yu** and A. Bouguettaya, Computing Service Skylines over Sets of Services, *IEEE International Conference on Web Services (ICWS)*, Miami FL, 2010 (Acceptance rate 17%).
- C.54. B. Desai, P. Andhale, M. Rege, and Q. Yu, Biclustering and Feature Selection Techniques in Bioinformatics, *Workshop on Data Mining with Graphs and Matrices (WDGMO10)*, in conjunction with *International Conference on Data Engineering and Management (ICDEM)*, TN, India, 2010.
- C.55. **Q. Yu** and M. Rege, A Relational Approach for Efficient Service Selection, *IEEE International Conference on Web Services (ICWS)*, Los Angeles, 2009 (Acceptance rate 18%).
- C.56. A. Bouguettaya, D. Gracanin, **Q. Yu**, X. Zhang, X. Liu, Z. Malik, and A. Rezgui, WebSenior: A Digital Government Infrastructure for Senior Citizens, *International Workshop on the Management of Business Processes in Government*, co-located with 5th International Conference on Business Process Management (BPM 2007), Brisbane, Australia, September 2007.
- C.57. A. Bouguettaya, D. Gracanin, **Q. Yu**, X. Zhang, X. Liu, and Z. Malik, Ubiquitous Web services for E-Government Social Services, *AAAI Spring Symposium The Semantic Web Meets eGovernment*, Stanford University, California, USA, March 27-29, 2006.
- C.58. A. Bouguettaya, B. Medjahed, A. Rezgui, M. Ouzzani, X. Liu, **Q. Yu**, WebDG - A Platform for E-Government Web Services, *ER (Workshops) 2004*: 553-565

Patent

1. **Q. Yu**, F. Weng, and Y. Meng, Method and system for implementing multiple web services for a service query, EP Patent 2,096,594, 2010.

PRESENTATIONS

1. Better Learning from Less Labeled Data: Active Learning from Many-Class and Multi-label Problems in Knowledge-Rich Domains, RIT CHAI Research Seminar, November 2019 (with Weishi Shi).
2. Discovering a Domain Knowledge Representation for Image Grouping: Multimodal Data Modeling, Fusion, and Interactive Learning, GCCIS Research Showcase, RIT, April 2017 (with Xuan Guo).
3. Learning Sparse Functional Factors for Large-scale Service Clustering, IEEE International Conference on Web Services (ICWS), New York, NY, June 2015.
4. WS-HFS: A Heterogenous Feature Selection Framework for Web Services Mining, IEEE International Conference on Web Services (ICWS), New York, NY, June 2015.
5. Predicting Dynamic Requests Behavior in Long-Term IaaS Service Composition, IEEE International Conference on Web Services (ICWS), New York, NY, June 2015.
6. On Large-scale Service Clustering: Sparse Coding and Probabilistic Modeling, RMIT, Melbourne, December 2014.

7. Big Data Analytics in Service Computing, *University of Rochester*, Rochester NY, April 2014.
8. Trace Norm Regularized Matrix Factorization for Service Recommendation, *IEEE International Conference on Web Services (ICWS 2013)*, Santa Clara CA, June 2013
9. Big Data Analytics in Service Computing, *Upper State New York Oracle User Group*, Buffalo State University, Buffalo NY, June 2013.
10. Efficient Large-scale Service Clustering, *GCCIS PhD Colloquium Series*, Rochester Institute of Technology, Rochester NY, February 2013.
11. Sparse Functional Representation for Large-scale Service Clustering, *10th International Conference on Service Oriented Computing (ICSOC 2012)*, Shanghai, China, November 2012.
12. Decision Tree Learning from Incomplete QoS to Bootstrap Service Recommendation, *IEEE International Conference on Web Services (ICWS)*, Honolulu, Hawaii, June 2012.
13. Place Semantics into Context: Service Community Discovery from the WSDL Corpus, *9th International Conference on Service Oriented Computing, ICSOC 2011*, Paphos Cyprus, December 2011.
14. On Service Community Learning: A Co-Clustering Approach, *IEEE International Conference on Web Services (ICWS)*, Miami FL, June 2010
15. Computing Service Skylines over Sets of Services, *IEEE International Conference on Web Services (ICWS)*, Miami FL, June 2010
16. A Relational Approach for Efficient Service Selection, *IEEE International Conference on Web Services (ICWS)*, Los Angeles, June 2009
17. A Web Service Management Module for GIS, Robert Bosch LLC, Palo Alto, CA, August 2006
18. Ubiquitous Web services for E-Government Social Services, *AAAI Spring Symposium The Semantic Web Meets eGovernment*, Stanford University, CA, April 2006.

RESEARCH EXHIBITIONS

1. Big Data Analytics, Rajendra K Raj, Carol Romanowski, Xumin Liu, and **Qi Yu**, *ImagineRIT*, May 2013.
2. Big Data Stream Processing and Mining, Saravana Kumar and **Qi Yu** (faculty mentor), *ImagineRIT*, May 2013.
3. Social Network Recommendations Using Map Reduce, Saravana Kumar and **Qi Yu** (faculty mentor), *ImagineRIT*, May 2013.

TEACHING EXPERIENCE

- **Courses taught at Rochester Institute of Technology:**
 - Data Driven Knowledge Discovery (ISTE-780): Fall 2014–20
 - Knowledge Processing Technologies (ISTE-612): Spring 2013–18, Summer 2016–18
 - Database Connectivity and Access (ISTE-330/722): Fall 2013, Spring 2013
 - Problem Solving in Information Technology I (ISTE-120): Fall 2013
 - Data Modeling and Database Implementation (4002-720): Fall 2010, 2011, Winter 2011
 - Introduction to Database and Data Modeling (4002-360): Fall 2008, 2009, Winter 2010
 - Fundamentals of Data Modeling (4002-461): Fall 2008
 - Database Client/Server Connectivity (4002-484/784): Winter 2008, 2009, 2012, Spring 2008, 2009, 2010, 2012
 - Web Database Integration (4004-751): Spring 2008
 - Introduction to IT Programming I (4002-217): Fall 2009, 2010, 2011, 2012

- Introduction to IT Programming II (4002-218): Winter 2009
- Introduction to IT Programming III (4002-219): Fall 2012
- **Teaching Assistant.** CS1044: Introduction to Programming in C, Prof. Dwight Barnette, Fall 2005 and Spring 2006, Virginia Tech.
- **Teaching Assistant.** CS5614: Database Management Systems, Prof. Athman Bouguettaya, Fall 2004, Virginia Tech.
- **Instructor.** CS1604: Introduction to the Internet (jointly with Prof. Dwight Barnette), Fall 2006 and Spring 2007, Virginia Tech.
- **Master Student Mentor.** Design and Implement a Two-phase Data Clustering Algorithm, Spring 2005, Virginia Tech.
- **Undergraduate Final Year Project Mentor.** A Genetic Algorithm for Data Mining, Spring 2003, National University of Singapore.

STUDENT ADVISING

PhD Advisor

1. Shixuan Guo (Started in Fall 2020)
2. Dingrong Wang (Started in Fall 2020)
3. Zulun Zhu (Started in Fall 2020)
4. Yuansheng Zhu (Started in Fall 2019, passed Research Potential Assessment in May 2020)
5. Dayou Yu (Started in Fall 2019, passed Research Potential Assessment in May 2020)
6. Deep Shankar Pandey (Started in Fall 2019, passed Research Potential Assessment in May 2020)
7. Xiaofan Que (Started in Fall 2019, passed Research Potential Assessment in July 2020)
8. Wentao Bao (Started in Fall 2019, co-supervised with Yu Kong, passed Research Potential Assessment in May 2020)
9. Minxun Zheng (Started in Fall 2017, passed Research Potential Assessment in May 2018)
10. Hitesh Sapkota (Started in Fall 2017, passed Research Potential Assessment in May 2018)
11. Krishna Neupane (Started in Fall 2017, passed Research Potential Assessment in May 2018)
12. Moayad Alshangiti (Started in Fall 2016, passed Research Potential Assessment in May 2017)
13. Weishi Shi (Started in Fall 2016, passed Research Potential Assessment in May 2017)
14. Xuan Guo (Graduated in May 2017, co-advised with Dr. Anne Haake, first employment: Applied Researcher in Amazon's Deep Learning Group)

Advisor of Master's Thesis/Project:

1. 5 MS theses
2. Over 50 capstone projects

Advisor of Independent Study:

- Sponsored 13 independent studies

SERVICE TO ROCHESTER INSTITUTE OF TECHNOLOGY

University Committees

1. MS AI Task-force 2020 –

College Committees

1. GCCIS MS Data Science Curriculum Committee 2019 –
2. GCCIS PhD faculty search committee, 2017 – 2018
3. GCCIS Trustee Scholarship Committee, 2010 – 2015
4. GCCIS Tenure Expectation Committee, 2014
5. GCCIS FEAD Committee, 2011 – 2014
6. GCCIS Seed Proposal Review Committee, 2012
7. GCCIS Visiting Scholar Committee, 2009 – 2011

Department Committees

1. IST Department Curriculum Committee [Chair: 2016-2017, 2018-2021]
2. IST Department Search Committee, 2018 – 2019
3. IST Department Search Committee (Co-chair), 2013 – 2014
4. IST Department Graduate Curriculum Committee, 2011 – 2012
5. IST Department Undergraduate Curriculum Committee, 2009 – 2011

PROFESSIONAL SERVICES

Grant Review Panel

- National Science Foundation (NSF) review panels: 2009, 2013–2020

Editorial Board

- International Journal of Data Mining, Modeling and Management (IJDMMM). 2008 –

Guest Editor

- IEEE Transactions on Big Data (IEEE TBD), Special issue on Big Data on the Web, 2015
- IEEE Transactions on Services Computing (IEEE TSC), Special issue on service query models and efficient selection, 2010

Conference Organization

1. Demonstration chair: International Conference on Service Oriented Computing (ICSOC 2019)
2. Publication chair: International Conference on Service Oriented Computing (ICSOC 2018)
3. Publication chair: International Conference on Service Oriented Computing (ICSOC 2012)
4. Track chair: IEEE International Conference on Cloud Computing Technology and Science (IEEE CloudCom 2012)
5. Workshop Co-Chair: IoT 2015: Special Track on Internet-of-Things, in conjunction with IEEE 4th International Conference on Mobile Services.

Conference Reviewer/Program Committee Member

1. International Conference on Machine Learning (ICML 2020, 2021)
2. AAAI Conference on Artificial Intelligence (AAAI 2021)
3. International Conference on Artificial Intelligence and Statistics (AISTATS 2021)
4. IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR 2021)
5. Medical Image Computing and Computer Assisted Interventions (MICCAI 2022, 2021)
6. Neural Information Processing Systems (NeurIPS 2020)

7. IEEE International Conference on Web Services (IEEE ICWS 2018-19)
8. IEEE International Conference on Big Data (IEEE BigData 2013–2019)
9. IEEE International Conference on Cloud Computing (CLOUD 2009–2019)
10. International Conference on Service Oriented Computing (ICSOC 2008, 2013-2019)
11. International Conference on Computer Communications and Networks (ICCCN, 2014-2016)
12. IEEE Conference on Service-Oriented Computing and Applications (SOCA 2009–2016)
13. IEEE International Conference on Information Reuse and Integration (IRI 2009–2019)
14. ACS/IEEE International Conference on Computer Systems and Applications (AICCSA 2010–2018)
15. International Conference on Parallel Processing (ICPP 2015)
16. IEEE International Conference on Enabling Technologies: Infrastructure for Collaborative Enterprises (WETICE 2015, 2017, 2018)
17. IEEE International Conference on Collaboration and Internet Computing (CIC 2015)
18. International Conference on Body Area Networks (BodyNets 2015)
19. International Workshop on Social Networks Analysis, Management and Security (SNAMS 2015)
20. International Conference on Machine learning, Optimization and big Data (MOD 2015, 2017)
21. International Symposium on Foundations and Applications of Big Data Analytics (FAB 2015)
22. International Workshop on Data-driven and Predictive Business Analytics (DPBA 2015)
23. ASONAM PhD Forum and Posters Track (ASONAM-PFP 2015)
24. IEEE Asia-Pacific Services Computing Conference (IEEE APSCC 2009–2013, 2015, 2017)
25. International Conference on E-business (ICE-B 2009–2015)
26. Annual International Conference on Digital Government Research (dg.o 2012–2015)
27. International Conference on Business Information Systems (BIS 2015)
28. International Conference on Collaborative Computing (CollaborateCom 2009–2014)
29. International Conference on Web Information Systems Engineering (WISE 2011–2014)
30. The Australasian Web Conference (AWC 2013)
31. Australasian Database Conference (ADC 2009–2012)
32. International Conference on Cloud and Green Computing (CGC 2011)
33. International track on Adaptive and Reconfigurable Service-oriented and component-based Applications and Architectures (AROSA 2011)
34. International Conference on Business Process and Services Computing (BPSC 2010)
35. The First International Conference on Cloud Computing, GRIDs, and Virtualization (CLOUD COMPUTING 2010).
36. The First International Workshop on Data and Process Provenance, WDPP 2009
37. International Conference on Intensive Applications and Services, INTENSIVE 2009
38. International Conference on Frontier of Computer Science and Technology, FCST 2009
39. World Congress on Privacy, Security, Trust and the Management of e-Business, 2009

Reviewer for Journals

1. IEEE Transactions on Services Computing, TSC.
2. ACM Transactions on the Web, TWEB.
3. IEEE Transactions on Evolutionary Computation, TEC.
4. Data & Knowledge Engineering Journal, DKE
5. Knowledge and Information Systems, KAIS
6. The International Journal on Very Large Data Bases, VLDB Journal.
7. International Journal of Cooperative Information Systems, IJCIS.
8. International Journal on Distributed and Parallel Databases, DAPD.
9. International Journal of Web Services Research, JWSR.
10. ACM Transactions on Information Technology, TOIT.
11. ACM Transactions on Information Science, TOIS.
12. IEEE Transactions on Knowledge and Data Engineering, TKDE.
13. IEEE Transactions on Cybernetics, TCYB
14. Journal of Systems and Software, JSS