NSF BIOGRAPHICAL SKETCH

NAME: Choi, Sou Cheng T.

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POSITION TITLE & INSTITUTION: Research Associate Professor, Illinois Institute of Technology

(a) PROFESSIONAL PREPARATION

INSTITUTION	LOCATION	MAJOR / AREA OF STUDY	DEGREE (if applicable)	YEAR YYYY
National University of Singapore	Singapore	Computational Science, Mathematics	BS	1997
National University of Singapore	Singapore	Statistics and Applied Probability	MS	2000
Stanford University	Stanford, CA	Computational and Mathematical Engineering	PHD	2007

(b) APPOINTMENTS

2020 - present Chief Data Scientist, Kamakura Corporation, Chicago, IL
2017 - present Research Associate Professor, Illinois Institute of Technology, Chicago, IL
2018 - 2020 Lead Researcher, Allstate Corporation, Chicago, IL
2016 - 2017 Principal Data Scientist, Allstate Corporation, Chicago, IL
2014 - 2017 Research Assistant Professor, Illinois Institute of Technology, Chicago, IL
2014 - 2016 Senior Statistician, NORC at the University of Chicago, Chicago, IL
2010 - 2013 Research Scientist, University of Chicago/Argonne National Laboratory, Chicago, IL
2007 - 2013 University Affiliate, Stanford University, Stanford, CA
2007 - 2010 Senior Member of Technical Staff, Oracle Inc., Redwood Shores, CA
1998 - 2000 Financial Software Engineer, Kamakura Corporation, Singapore
1997 - 1998 Systems Analyst, Union Bank of Switzerland, Singapore

(c) PRODUCTS

Products Most Closely Related to the Proposed Project

1. Choi ST, Ding Y, Hickernell FJ, Jiang L, Jimenez Rugama L, Li D, Rathinavel J, Tong X, Zhang K, Zhang Y, Zhou X. GAIL: Guaranteed Automatic Integration Library (Versions 1.0--2.3.1). MATLAB Software. 2020 June; Available from: http://gailgithub.github.io/GAIL_Dev/
2. Choi ST, Hickernell FJ, McCourt M, Rathinavel J, Sorokin A. QMCPy: A quasi-Monte Carlo Python Library (Version 0.4). Python Software. 2020 August; Available from: https://qmcsoftware.github.io/QMCSoftware
3. Choi ST, Ding Y, Hickernell FJ, Tong X. Local adaption for approximation and minimization of univariate functions. Journal of Complexity. 2017; 40:17--33. Available from: https://www.sciencedirect.com/science/article/pii/S0885064X16301108
4. Hickernell FJ, Choi ST, Jiang L, Jimenez Rugama L. Monte Carlo simulation, automatic stopping criteria for. Wiley StatsRef: Statistics Reference. 2018; Available from: https://onlinelibrary.wiley.com/doi/abs/10.1002/9781118445112.stat08035

5. Choi ST, Paige CC, Saunders M. MINRES-QLP: A Krylov subspace method for indefinite or singular symmetric systems. SIAM J. Sci. Comput. 2011; 33(4):1810--1836. Available from: https://epubs.siam.org/doi/10.1137/100787921

Other Significant Products, Whether or Not Related to the Proposed Project

1. Choi ST, Saunders M. ALGORITHM 937: MINRES-QLP for Singular Symmetric and Hermitian Linear Equations and Least-Squares Problems. ACM TOMS. 2014; 40(2):16:1–16:12. Available from: https://dl.acm.org/doi/10.1145/2527267
2. Katz D, Choi ST, Lapp H, Maheshwari K, Löffler F, Turk M, Hanwell MD, Wilkins-Diehr N, Hetherington J, Howison J, Swenson S, Allen GD, Elster AC, Berriman B, Venters C. Summary of the First Workshop on Sustainable Software for Science: Practice and Experiences. Journal of Open Research Software. 2014; 2(1):e6. Available from: https://openresearchsoftware.metajnl.com/articles/10.5334/jors.an/
3. Wulfe B, Chintakindi S, Choi ST, Hartong-Redden R, Kodali A, Kochenderfer M. Real-Time Prediction of Intermediate- Horizon Automotive Collision Risk. 17th International Conference on Autonomous Agents and Multiagent Systems. 2018; Available from: https://dl.acm.org/doi/10.5555/3237383.3237858
4. Choi ST, Lin Y, Mulrow E. Comparison of Public-Domain Software and Services for Probabilistic Record Linkage and Address Standardization. Towards Integrative Machine Learning and Knowledge Extraction. 2015; :51-66.
5. Donoho DL, Flesia A, Huo X, Levi O, Choi ST, Shi D. BEAMLAB (Version 200). MATLAB Software. 2003; Available from: http://www-stat.stanford.edu/~beamlab/

(d) SYNERGISTIC ACTIVITIES

1. Since 2013, served as a mentor to 12 graduate (8 doctoral and 4 master's) students who are Applied Mathematics majors at IIT. Served as thesis committee members for two of the students. Seven of the PhD graduates are now working in either academia or industries. I continue to collaborate with current students and alumni working in industries and academia.

2. Taught six research seminar courses at IIT and the University of Chicago (UC) between 2013 and 2020. Each course has between one to eight students at undergraduate or graduate levels from applied mathematics or computer science. We explored modern machine learning methods for problems and big data stemming from computational finance or social sciences.

3. Gave over 80 scientific talks locally and internationally in the past ten years. Three of them are plenary talks at international conferences.

4. Co-organized multiple international conferences and (co-)hosted at least ten mini-symposiums in major conferences organized by the Society of Industrial and Applied Mathematics (SIAM), the American Mathematical Society (AMS), and the International Linear Algebra Society (ILAS).

5. Co-recipient of the SIAM (Society for Industrial and Applied Mathematics) Activity Group on Linear Algebra (SIAG/LA) Prize. International award for the best peer-reviewed journal paper from 2009 to 2011 with significant research contributions to the field of linear algebra, and with direct or potential applications.