

Henry Shaowu Yuchi

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755 Ferst Dr NW, Atlanta GA 30318, USA

Education

Industrial and System Engineering, Georgia Institute of Technology *Atlanta, US*

PhD in Machine Learning (Statistics) *2018-2023 (Expected)*
Advisors: Dr Yao Xie & Dr Jeff Wu | *GPA 4.0/4.0*

Magdalene College, University of Cambridge *Cambridge, UK*

BA & MEng in Computer & Information Engineering | *Grade: Class I & Distinction* *2014-2018*

The University of Hong Kong *Hong Kong*

Joint admission program with University of Cambridge *2013-2014*
BEng (First Year) | *GPA: 3.80/4.30* | *Core GPA: 4.20/4.30*

Research Projects

Strategic Environmental Research & Development Program with DOD *2019-Now*

- Built a marked temporal point process model for predicting aircraft coating degradation and corrosion;
- Conducted change detection and time series analysis on streaming data collected by sensors;
- Built physics-based surrogate models to guide estimation;
- Processed and analyzed large data sets via data visualization;
- Collaborated closely with industrial partners including Luna, Boeing, and USAF.

Credit Card Fraud Detection with Macy's *2018-2019*

- Built a one-class online change detection framework for streaming event data;
- Modeled event data using marked spatio-temporal point process and Long Short-Term Memory;
- Applied adversarial learning and neural network on sequential data;
- Utilized the detection framework to detect fraudulent credit card transactions at Macy's.

Technical Skills

- Coding software: Python, R, MATLAB.
- Machine learning packages: PyTorch, Scikit-learn.
- Finite element software: Abaqus FEA, LS-DYNA.
- Languages: French (intermediate), Mandarin (native), Cantonese (intermediate).

Teaching Experience

Teaching Assistant for ISYE2028 Statistical Methods

Fall 2018

- Gave two lectures to undergraduate students on hypothesis testing;
- Held one-hour office hours every week for student consultation;
- Organized class project proposals and presentations;
- Composed course assignment solution manuals;
- Graded quizzes, midterm and final examinations.

Teaching Assistant for ISYE6416 Computational Statistics

Spring 2019

- Gave four lectures to graduate students on regression splines, EM algorithm, and Gaussian mixture models;
- Gave two recitation sessions on course revision;
- Held one-hour office hours every week for student consultation;
- Organized class project presentations;
- Graded course assignments, midterm and final examinations for class of 50.

Publications

- Yuchi, H. S., Repasky, M., Ligonde, G. K., Bassiri-Ghard, N., & Xie, Y. (2021), Denoising Piezoresponse force Microscopy Data Using Bayesian Low-Rank Matrix Completion. (Submitted to 2022 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)).
- Yuchi, H. S., Joseph, V. R., Wu, C. F. J. (2021), Finite Element Simulations with Multiple Mesh Density Parameters. (Presented at JSM 2021, to be submitted).
- Yuchi, H. S., Mak, S., & Xie, Y. (2021), Bayesian Uncertainty Quantification for Matrix Completion. Retrieved from <https://arxiv.org/abs/2101.01299> (Presented at INFORMS 2021, submitted).
- Mak, S., Yuchi, H. S., & Xie, Y. (2021), Information-Guided Sampling for Low-Rank Matrix Completion. *ICML 2021 Workshop on Information-Theoretic Methods for Rigorous, Responsible, and Reliable Machine Learning*.
- Kacher, J., Xie, Y., Voigt, S. P., Zhu, S., Yuchi, H. S., Key, J., Kalidindi, S. R. (2021), Signal Processing Challenges and Examples for *in-situ* Transmission Electron Microscopy (Accepted by IEEE SPM Special Issue on Signal Processing for Advanced Materials).
- Zhu, S., Yuchi, H. S., Zhang, M., Xie, Y. (2021), Sequential Adversarial Anomaly Detection with Deep Fourier Kernel. *2021 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*.
- Zhu, S., Yuchi, H. S., Xie, Y. (2020), Adversarial Anomaly Detection for Marked Spatio-Temporal Streaming Data. *2020 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*.
- Seshadri, P., Yuchi, S., Parks, G. T., & Shahpar, S. (2020), Supporting multi-point fan design with dimension reduction. *The Aeronautical Journal*, 124 (1279), 1371-1398.
- Seshadri, P., Yuchi, S., & Parks, G. T. (2019), Dimension reduction via Gaussian ridge functions. *SIAM/ASA Journal on Uncertainty Quantification*, 7(4), 1301-1322.

Awards

- American Statistical Association SPES & QP Student Paper Competition Award 2021;
- Georgia Tech IDEaS-TRIAD Graduate Research Fellowship 2020;
- Cambridge International Trust Scholarship 2014-2018;
- Magdalene College Prize for Engineering 2017, 2018;
- Magdalene College Scholarship 2015, 2016, 2017, 2018.

Activities

ISyE Graduate Student Advisory Committee

Atlanta, US

Member for PhD students

Feb 2020-Nov 2021

- Organized student feedback sessions and communicated with department regularly;
- Organized incoming PhD student events and Q&A sessions in 2020 and 2021.

Cambridge University Engineering Department

Cambridge, UK

Undergraduate Research Opportunity Project sponsored by Rolls-Royce

Jul 2017-Jun 2018

- Practised Computational Fluid Dynamics simulations, geometry and meshing generation;
- Analyzed computational models of turbo blade designs for estimation and uncertainty quantification;
- Utilized Gaussian process regression and dimension reduction techniques on regression and estimation for high-dimensional data.

Rolls-Royce Plc

Derby, UK

Summer engineering Intern

Jun-Sep 2016

- Modeled composite delamination in impact response of fan blades using finite element analysis;
- Performed sensitivity analysis on impact response and parametrized structural design;
- Carried out model reduction by variable selection and regression;
- Performed predictive estimation of delamination using reduced model.

Reveal Media Ltd

London, UK

Software & engineering intern

Aug-Oct 2015, Sep-Oct 2016

- Assisted development of body camera products for UK police force;
- Assisted software development of customer interface;
- Performed hardware testing on camera and hub devices.

Ansys/Granta Design Ltd

Cambridge, UK

Summer engineering intern

Jun-Aug 2015

- Translated material science and engineering lecture notes and texts into simplified and traditional Chinese for high school and college students;
- Generated subtitles for video tutorials for Granta EduPack software;
- Contacted university faculty and students in China, Hong Kong, and Taiwan for use experience and suggestions.