

Henry Shaowu Yuchi

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Georgia Institute of Technology, Atlanta GA, USA

Education

ISyE, Georgia Institute of Technology

Atlanta, GA

PhD in Machine Learning | Advisors: Dr Yao Xie & Dr Jeff Wu | GPA 4.0/4.0

2018-2023(Expected)

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

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.

Teaching Experiences

- Graduate Teaching Assistant for ISYE2028 Simple Statistical Methods;
- Graduate Teaching Assistant for ISYE6416 Computational Statistics.

Research Projects

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

- Modeling aircraft coating degradation and corrosion process with marked temporal point process;
- Physics-based reduced order modeling for streaming sensor data and change detection;
- Close collaboration with industrial partners including Luna, Boeing, and USAF.

Credit Card Fraud Detection with Macy's

2018-2019

- Streaming data modeling with spatio-temporal Hawkes point process;
- Credit card fraud detection in real-time using change detection techniques;
- One-class change detection with adversarial network.

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 Christopherson Prize for Engineering 2018;
- Magdalene College Bundy Scholarship 2018;
- Magdalene College Scholarship 2015, 2016, 2017;
- Magdalene College Lewins Prize for Engineering 2017.

Experience

Student Researcher, Department of Engineering

Cambridge, UK

Dimension Reduction in Turbomachinery Design

Jul 2017-Jun 2018

Combined with Undergraduate Research Opportunity Project

Jul-Oct 2017

Sponsored by Rolls-Royce Plc

- Turbomachinery and Computational Fluid Dynamics, geometry generation, meshing & Reynolds-averaged Navier-Stokes equations (RANS);
- Estimation and uncertainty quantification for computational models of turbo blade designs;
- Gaussian process regression and dimension reduction techniques including active subspaces, minimum average variance estimation (MAVE) and manifold optimization.

Summer Student Intern, Rolls-Royce Plc

Derby, UK

Impact Analysis on Turbomachinery Blades

Jun-Sep 2016

- Fan blade impact response modeling for composite blade delamination by finite element method driven computational simulations;
- Sensitivity analysis between impact response and parameterized structural designs;
- Model reduction by optimization and regression;
- Estimation and inference of blade delamination from reduced model.

Summer Student Intern, Reveal Media Ltd

London, UK

Software Engineering & Product Development

Aug-Oct 2015, Sep-Oct 2016

- Product development for UK national police force: body camera technology;
- Software development for customer interface with C++;
- System commissioning on location.

Summer Student Intern, Granta Design Ltd

Cambridge, UK

Material Science, Engineering & Education

Jun-Aug 2015

- Translation of material science and engineering lecture notes and texts into simplified and traditional Chinese for high school and college students;
- Translation of video tutorial scripts and subtitles for the company material science education software;
- Communications between university faculties and students from China, Hong Kong and Taiwan for user experience and suggestions.