

Matthew Stewart

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Education

Ph.D. in Environmental Science & Engineering, Harvard University, US Aug. 2017 – present

Secondary Field: Computational Science & Engineering

Cumulative G.P.A. 3.89 / 4.0 (Class Rank: Top 5%)

Advisor: Professor Scot T. Martin

Thesis topic: Design and development of intelligent drone-based chemical sensory systems

Joint BEng/MEng in Mechanical Engineering, Imperial College London, UK Sep. 2013 – Jun. 2017

Cumulative G.P.A. 3.96 / 4.0 (Class Rank: Top 5%)

Year abroad: Final year completed at the National University of Singapore, Singapore

Master's thesis: Development of a computational software program for multi-phase pipe flow simulations

Undergraduate thesis: Development of a single-cylinder engine testing platform

Research Experience

Doctoral Researcher, Harvard University, United States Aug. 2017 – Present

Advisor: Professor Scot T. Martin

- Developing intelligent drone-based chemical sensing for atmospheric gaseous organic compounds
- Characterizing temporal and spatial distribution of volatile and semi-volatile organic compounds over the Amazon Rainforest using advanced analytical technique
- Incorporation of AI and machine learning techniques to the drone platform to 'sniff' for emission sources

Undergraduate Researcher, National University of Singapore, Singapore May. 2017 – Aug. 2017

Advisor: Professor Ove Bratland

- Collaborated with professors and industry professionals to study nodule buildup in drilling risers
- Developed and enhanced a computational model to study the vertical motion of multi-phase solid-liquid-gas flow in a vertical nodule riser
- Provided key model insights which led to reductions in both computational cost and complexity

Teaching Experience

Teaching Fellow, Harvard University, US Jan. 2018 – present

- Assisting in teaching an advanced-level undergraduate course in engineering thermodynamics
- Leading class sections and preparing practice problems for laboratory experiments
- Received one of the highest approval ratings as teaching fellow in the department
- Supervising students in laboratory projects, graded exams and reports

Data Science Blogger, Towards Data Science, US Feb. 2019 – present

- Posted more than fifty articles related to data science, artificial intelligence, and machine learning
- Obtained more than 2,500 followers on the Medium blogging platform in less than 9 months

Undergraduate Tutor, Harvard University, US Aug. 2017 – May. 2018

- Tutored multiple undergraduates in weekly sessions across the fall semester
- Topics include functions and mathematics, multivariable calculus, thermodynamics, and data science

Work Experience

Machine Learning Engineer, Scalable Magic Nov. 2019 – present

- Utilized generative adversarial networks to produce ultra-high-resolution landscapes images
- Develop a book cover for ‘The AI Age’ using a Wasserstein GAN with gradient penalty

Data Science Intern – Meteorology Department, ClimaCell May. 2019 – Sep. 2019

- Developed a pollen emission inventory for the continental United States using satellite data
- Coupled a large-scale climate model to the pollen emission inventory with a dispersion model

Machine Learning and Blockchain Consultant, Critical Future Nov. 2018 – present

- Developed solutions for several of the largest real-estate and financial technology companies in Europe
- Successfully negotiated large contracts with companies on behalf of the consulting firm

Publications

Ye, J.; **Stewart, M.**; Guimaraes, P.; Batista, C. E.; Ribeiro, I. O.; Medeiros, A.; Li, Y.; Tomato, M. A.; Gu, D.; Moreno, R.; Duvoisin, S.; McKinney, K. A.; Guenther, A. B.; Souza, R. A. F.; and Martin, S. T., Heterogeneity in the Concentration Distribution of Semi-Volatile Organic Compounds in the Surface Boundary Layer over the Tropical Forest in Central Amazonia, *International Aerosol Conference*, Submitted.

McKinney, K.; Wang, D.; Ye, J.; **Stewart, M.**; Guimaraes, P.; Batista, C. E.; Souza, R. A. F.; Alves, E.; Gu, D.; Guenther, A.; and Martin, S. T.; A Sampler for Atmospheric Volatile Organic Compounds by Copter Unmanned Aerial Vehicles; *International Aerosol Conference*, Submitted.

Selected Awards and Honors

- Student Conference Poster Award (American Association for Aerosol Research) 2019
- Certificate of Distinction in Teaching (Harvard University, US) 2018-2019
- Stonington Endowment Graduate Fellowship (Harvard University, US) 2018-2019
- Thomas Harley Charity Scholarship (Thomas Harley Charity, UK) 2013-2017
- Imperial College Dean’s List (Imperial College London, UK) 2013-2017
- Engineering Undergraduate of the Year Award Finalist (TARGETjobs, UK) 2016
- RAEng Engineering Advanced Leadership Award (Royal Academy of Engineering, UK) 2015
- Completed London Marathon (London, UK) 2015