KYLE SWANSON

swansonk.14@gmail.com • Trinity College, Cambridge, CB2 1TQ, United Kingdom • +44 7472 352671

EDUCATION

University of Cambridge (Trinity College), Cambridge, United Kingdom
MASt in Mathematical Statistics (Part III of the Mathematical Tripos) *Expected June 2020*

Massachusetts Institute of Technology, Cambridge, MA
M.Eng. in Computer Science and Engineering, advised by Regina Barzilay *June 2019*
B.S. in Computer Science and Engineering (Course 6-3) and Mathematics (Course 18) *June 2018*
GPA: 5.0/5.0
Courses: Introduction to Machine Learning, Advances in Computer Vision, Advanced Natural Language Processing, Inference and Information, Design and Analysis of Algorithms, Software Construction, Linear Algebra, Real Analysis

RESEARCH/WORK EXPERIENCE

Scholarships: Marshall Scholarship, MIT EECS Angle Undergraduate Research and Innovation Scholar
Honor Societies: Phi Beta Kappa (PBK), Tau Beta Pi (TBP), Eta Kappa Nu (HKN)
Programming Skills: Python, PyTorch, scikit-learn, Java, Scala, HTML, CSS, JavaScript

ASAPP, Inc. – Machine Learning Research Intern, New York, NY *Summer 2019*
Investigated using optimal transport to increase the interpretability of neural models for natural language processing [1]

MIT CSAIL – Graduate Researcher in Machine Learning, Cambridge, MA *September 2018–June 2019*
Worked with Regina Barzilay in MIT's Computer Science and Artificial Intelligence Laboratory (CSAIL) along with Amgen, BASF, and Novartis to develop message passing neural networks to improve molecular property prediction [2]

ASAPP, Inc. – Machine Learning Research Intern, New York, NY *Summer 2018*
Researched and built a retrieval-based chatbot with a 56% improvement in performance over ASAPP's previous model [3]

MIT CSAIL and MGH – Undergraduate Researcher in Machine Learning, Cambridge/Boston, MA *September 2016–June 2018*
Collaborated with Regina Barzilay at MIT CSAIL and Constance Lehman at Massachusetts General Hospital (MGH) to use convolutional neural networks to improve breast cancer risk prediction in mammography [4]

Suleyman Demirel University – Machine Learning Teacher, Almaty, Kazakhstan *January 2018*
Developed and taught a one-month machine learning course to 20 university students: https://github.com/swansonk14/IntroML

Driver, Inc. – Data Science Intern, San Francisco, CA *Summer 2017*
Developed an algorithm to accurately detect near-duplicate content in cancer patients' medical records

Microsoft Corporation – Front-end Software Engineering Intern, Bellevue, WA *Summer 2016*
Improved the performance and aesthetic of an internal web tool used to view application events in near real-time

MIT Professional Education – TA for Cybersecurity Course, Cambridge, MA *August 2015–February 2016*
TA for the online MIT Professional Education class *Cybersecurity: Technology, Application and Policy* with 1,900 students

MIT CSAIL – Undergraduate Researcher in Cybersecurity, Cambridge, MA *Summer 2015*
Investigated defenses against cyberattacks, particularly those exploiting memory safety bugs

PUBLICATIONS

[1] **K. Swanson**, L. Yu, T. Lei. Interpretable Text Matching by Learning a Constrained Alignment. *Workshop on Optimal Transport & Machine Learning at the Thirty-third Conference on Neural Information Processing Systems*, 2019.
[2] K. Yang, **K. Swanson**, W. Jin, C. Coley, P. Eiden, H. Gao, A. Guzman-Perez, T. Hopper, B. Kelley, M. Mathea, A. Palmer, V. Settels, T. Jaakkola, K. Jensen, R. Barzilay. Analyzing Learned Molecular Representations for Property Prediction. *Journal of Chemical Information and Modeling*, 2019.
[3] **K. Swanson**, L. Yu, C. Fox, J. Wohlwend, T. Lei. Building a Production Model for Retrieval-Based Chatbots. *Workshop on NLP for Conversational AI at the 57th Annual Meeting of the Association for Computational Linguistics*, 2019.
[4] C. Lehman, A. Yala, T. Schuster, B. Dontchos, M. Bahl, **K. Swanson**, and R. Barzilay. Mammographic Breast Density Assessment Using Deep Learning: Clinical Implementation. *Radiology*, 2018.
[5] K. Swanson, S. Trivedi, J. Lequieu, **K. Swanson**, R. Kondor. Deep learning for automated classification and characterization of amorphous materials. *Soft Matter*, 2019.