Shamak Dutta

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https://shamak.github.io

Education

2019–now **PhD in Electrical and Computer Engineering**, *University of Waterloo*, Canada.
Advisor: Stephen L. Smith
Teaching Assistant Award, Faculty of Engineering (2021)
University of Waterloo Graduate Scholarship ($1.2k) (2022)

2017–2019 **Masters in Systems Design Engineering**, *University of Waterloo*, Canada.
Advisors: Bryan Tripp & Graham Taylor
Vector Institute Research Award ($4k) (2018, 2019)
University of Waterloo Graduate Scholarship ($1k) (2019)
International Master's Student Award ($6.5k) (2018, 2019)
Thesis: Correlated Noise in Deep Convolutional Neural Networks

2012–2017 **Bachelors in Computer Engineering**, *University of Waterloo*, Canada.
Engineering International Student Scholarship ($20k) (2013)
President's Scholarship of Distinction ($2k) (2013)
President's Research Award ($1.5k) (2015)
GPA: 3.7/4.0 (Distinction)

Publications & Preprints

2023 **A Unified Approach to Optimally Solving Sensor Scheduling and Sensor Selection Problems in Kalman Filtering**.
S. Dutta, N. Wilde, S. L. Smith
submitted, 62nd IEEE Conference on Decision and Control (CDC), 2023.

2023 **Approximation Algorithms for Robot Tours in Random Fields with Guaranteed Estimation Accuracy**.
S. Dutta, N. Wilde, P. Tokekar, S. L. Smith
International Conference on Robotics and Automation (ICRA), 2023

2022 **Informative Path Planning in Random Fields via Mixed Integer Programming**.
S. Dutta, N. Wilde, S. L. Smith
61st IEEE Conference on Decision and Control (CDC), 2022.

2022 **An Improved Greedy Algorithm for Subset Selection in Linear Estimation**.
S. Dutta, N. Wilde, S. L. Smith
20th European Control Conference (ECC), 2022.

2018 **Convolutional Neural Networks Regularized by Correlated Noise**.
S. Dutta, B. Tripp, G. Taylor
15th Canadian Conference on Computer and Robot Vision (CRV), 2018.

2016 **Barcodes for Medical Image Retrieval Using Autoencoded Radon Transform**.
H. Tizhoosh, C. Mitcheltree, S. Zhu, and **S. Dutta**
23rd International Conference on Pattern Recognition (ICPR), 2016.

Research Experience

Summer 2018 **Research Intern**, *Preferred Networks*, Tokyo, Japan.
Advisors: Shunta Saito & Masaki Saito
Worked on scene prediction/generation using generative-adversarial networks.

Summer 2017 **Research Intern**, *Latent Logic (now Waymo)*, Oxford, United Kingdom.
Advisors: Joao Messias & Shimon Whiteson
Worked on 3D pose estimation from 2D video.

Fall 2016 **Research Intern**, *Amazon Search*, Palo Alto, USA.
Advisors: Bing Yin & Erick Cantu-Paz
Worked on ranking search queries on Amazon.com using Deep Structured Semantic Models.

Summer 2016 **Undergraduate Student**, *Adaptive Systems Lab*, University of Waterloo, Canada.
Advisor: Dana Kulic
Worked on regression methods for human motion prediction using recursive neural networks.

Summer 2016 **Undergraduate Student**, University of Waterloo, Canada.
Advisor: Stephen L. Smith
Worked on heuristics for the Generalized Traveling Salesman Problem.

Fall 2015 **Undergraduate Student**, *KIMIA Lab*, University of Waterloo, Canada.
Advisor: Hamid Tizhoosh
Worked on image compression and retrieval.

Work Experience

Summer 2018 **Research Intern**, *Preferred Networks*, Tokyo, Japan.

Summer 2017 **Research Intern**, *Latent Logic (now Waymo)*, Oxford, UK.

Fall 2016 **Research Intern**, *Amazon Search*, Palo Alto, USA.

Winter 2016 **Software Engineer Intern**, *Amazon Advertising*, Palo Alto, USA.

Summer 2015 **Software Engineer Intern**, *Lookout Security*, San Francisco, USA.

Fall 2014 **Software Engineer Intern**, *Avvasi*, Waterloo, Canada.

Winter 2014 **Software Engineer Intern**, *Achievers Inc.*, Toronto, Canada.

Summer 2013 **Software Engineer Intern**, *pVelocity*, Toronto, Canada.

Teaching Experience

Winter 2023 **Teaching Assistant**, Algorithms & Data Structures (ECE 250).

Fall 2022 **Teaching Assistant**, Probability Theory & Statistics II (ECE 307).

Summer 2022 **Teaching Assistant**, Probability Theory & Statistics I (ECE 203).

Winter 2022 **Teaching Assistant**, Algorithm Design & Analysis (ECE 406).

Fall 2021 **Teaching Assistant**, Probability Theory & Statistics II (ECE 307).

Winter 2021 **Teaching Assistant**, Algorithms & Data Structures (ECE 250).

Summer 2020 **Teaching Assistant**, Reinforcement Learning (ECE 493).

Winter 2020 **Teaching Assistant**, Algorithm Design & Analysis (ECE 406).

Courses (credit or audit)

UW (Graduate): Intro. to Optimization (J. Geelen), Convex Analysis & Optimization (H. Wolkowicz), Continuous Optimization (L. Tuncel), Combinatorial Optimization (C. Swamy), Functional Analysis (G. Tran), Stochastic Processes (W. Zhuang), Estimation & Hypothesis Testing (L. Zeng), Optimal Control (N. Azad), Stochastic Control (S. Smith), Model Predictive Control (Y. Pant), Computational Neuroscience (B. Tripp).

UW (Bachelors): Machine Learning (P. Poupart), Pattern Recognition (A. Wong), Quantum Mechanics

(M. Reimer), Probability Theory (R. Mazumder), Robotics & Control (D. Kulic), Adaptive Algorithms (O. Basir), Computer Networks (S. Naik), Analog Communications (W. Zhuang), Analog Control (S. Smith), Compilers (V. Ganesh), Discrete Math (M. Pei).