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

Faculty of Engineering Award, Electrical and Computer Engineering ($1.5k) (2023)
Graduate Research Dissemination Award, Faculty of Engineering (2023)
University of Waterloo Graduate Scholarship ($1.2k) (2022)
Teaching Assistant Award, Faculty of Engineering (2021)

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
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).

Academic Service

Conference Reviewing: Conference on Robot Learning (CoRL), International Conference on Intelligent Robots and Systems (IROS), International Conference on Robotics and Automation (ICRA), Conference on Decision and Control (CDC), American Control Conference (ACC).

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).