Michal Pándy

Wolfson College
Cambridge CB3 9BB
United Kingdom

mpmisko@gmail.com
LinkedIn
Github

Education

University of Cambridge *2020 - 2021*
MPhil (with distinction) in Advanced Computer Science
Thesis: Learning Graph Search Heuristics
Advisors: Dr. Rex Ying & Prof. Pietro Liò & Prof. Jure Leskovec

Imperial College London *2017 - 2020*
BEng (with distinction) in Computing
Thesis: Unsupervised Path Regression Networks
Advisor: Dr. Ronald Clark

Work Experience

Research Scientist Intern, Google Research *July - October, 2021*
Advisors: Dr. Thomas Mensink & Dr. Vittorio Ferrari *Vienna, Austria*
Project: Transferability Estimation using Bhattacharyya Class Separability (paper under review)

- Developed methods for quickly estimating how well can models transfer between two domains.
- Devised a state-of-the-art approach for estimating transferability based on the separability of target classes in the source domain.
- Contributed to OTT (Optimal Transport Tools for Jax) by resolving memory allocation issues in auto-vectorized functions.

Research Engineer Intern, Google Brain *June - September, 2020*
Advisor: Dr. Olivier Bachem *Vienna, Austria*
Project: RL for video game bug detection

- Conducted research on IL & RL algorithms, objectives, and observations to optimize exploration for video game glitch detection.
- Developed an environment to train and evaluate RL agents for finding video game bugs of varying complexity.
- Trained policies that showcased close to perfect environment coverage and detected approximately 90% of out-of-map glitches placed in the environment.

Teaching Assistant, Imperial College London *September 2019 - June 2020*
Supervisor: Prof. Sophia Drossopoulou *London, United Kingdom*

- Responsible for the marking and feedback of weekly math problem sets for a group of 8 freshmen.
- Lead hour-long weekly supervision sessions to clarify taught material.
- Developed advanced problems for interested students that went beyond curriculum.

Research Engineer Intern, Facebook AI Research (FAIR) *June - September, 2019*
Advisors: Dr. Benjamin Graham & Dr. Jeremy Reizenstein *London, United Kingdom*
Project: Developing sparse sub-manifold CNNs for semantic segmentation

- Investigated means to exploit sparsity in 3D computer vision by developing novel convolutional operators.
- Implemented highly optimized sparse convolutions using spatial data structures, developed fast sparse matrix multiplication using Halide, and added GPU concurrency to existing sparse CNN architectures.
- Explored optimal ways to combine sparse convolutions with existing CNN architectures.

Software Engineer Intern, Improbable *June - September, 2018*
Project: Implementing a large-scale distributed system for multiplayer games *London, United Kingdom*

- Worked on making Unreal Engine distributed by intercepting its networking layer.
- Designed, implemented, and tested time synchronization across distributed Unreal instances.
- Implemented a way for atomically migrating groups of entities across servers using dependency trees.

Software Engineer Intern, Shopify *June - September, 2017*
Project: Automatic garbage collection for container-orchestration systems *Ottawa, Canada*

- Impacted Shopify's infrastructure migration from data centers to the cloud.
- Implemented garbage collection for resources deployed in Kubernetes.
- Created an internal Slack bot for automatic personalized channel-wide messages.

Research

Publications

1. **Transferability Estimation using Bhattacharyya Class Separability**
   Michal Pándy, Andrea Agostinelli, Jasper Uijlings, Vittorio Ferrari, Thomas Mensink
   Under review at CVPR 2022.
2. **Learning Graph Search Heuristics**
   Michal Pándy, Rex Ying, Gabriele Corso, Petar Veličković, Jure Leskovec, Pietro Liò
   Accepted at NeurIPS 2021 Physical Reasoning and Inductive Biases for the Real World workshop.
3. **Neural Distance Embeddings for Biological Sequences**
   Gabriele Corso, Rex Ying, **Michal Pándy**, Petar Veličković, Jure Leskovec, Pietro Liò
   Accepted at NeurIPS 2021.
4. **Unsupervised Path Regression Networks**
   Michal Pándy, Daniel Lenton, Ronald Clark
   Spotlight talk at ICRA MLMP Workshop 2021. Accepted at IROS 2021.

Theses

1. **Learning Graph Search Heuristics**
   Master's Thesis, University of Cambridge, 2020 - 2021.
2. **Unsupervised Path Regression Networks**
   Undergraduate Thesis, Imperial College London, 2019 - 2020.

Notable Coursework Projects

1. **Emulating and Analysing the Sensitivity of Molecular Diffusion**
   Deep Gaussian Processes for molecular diffusion and a corresponding sensitivity analysis.
2. **Multi-Agent Reinforcement Learning with Sequential Social Dilemmas**
   Different RL algorithms analysed in a multi-agent scenario with social dilemmas.
3. **Flatland Challenge: Multi-Agent Reinforcement Learning for Train Scheduling**
   Multiple improvements for RL agents trained for the Flatland challenge.
4. **GANs for Sequence Generation**
   Novel way to train GANs to generate text sequences.

Selected Awards and Honors

- Imperial College London, Department of Computing Prize for Excellence (awarded to $8/200$ graduating students) *2020*
- Imperial College London, Engineering Dean's List (top 10% of cohort) *2018, 2020*
- McKinsey & Company - Solve It (1st place) *2020*
- Imperial College London, Corporate Partnership Program Award for a survey on skin rendering *2018*
- Hungarian Junior Templeton fellow *2017*
- International Math Modeling Challenge (Honorable mention) *2017*
- Junior Achievement Company of the Year Competition (2nd place) *2016*
- AXA Junior Achievement leadership award *2016*
- RoboCup Junior World Finals - rescue line, virtual rescue (top 3) *2016, 2014, 2013*
- FIRST Lego League World Finals (Innovative Solution Award) *2015*
- Slovak Robot Chimney climbing contest (1st place) *2014*

Projects

- Mobile app for contextual phone call processing (HackPrague 2017, 2nd overall, Most innovative UX)
- Vid.io - A place for unique movie insights (ICHack 2018, 2nd best web app)
- Mathematical model for finding an optimal place for a group of people to meet (IMMC 2017, Honorable mention)
- ARM assembly emulator written in C
- WACC language compiler implementing concurrency, OOP principles, and type inference
- 2D game engine written in C
- PintOS operating system extension implementing threading, user programs, and virtual memory