

Milad Alizadeh

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Education

Oct 2017 - present

University of Oxford

PhD in Computer Science, Machine Learning

Supervisors | **Yarin Gal** (University of Oxford) and **Nicholas Lane** (University of Cambridge)

Affiliation | Visiting student at the **Computer Lab, University of Cambridge**

Research | Published three first-author papers on **compression** of deep neural networks with **quantization** and **pruning** at **ICLR**. Collaborated on various projects on **data compression**, and **uncertainty estimation**.

2010 - 2011

University of Bristol

MSc in Communication Networks & Signal Processing with **Distinction** (ranked 2nd of 70)

Thesis | Studied the impact of various **QoS scheduling algorithms** on the performance of **WiMAX** transport protocols in mixed TCP/UDP scenarios. The project resulted in **two publications**.

2005 - 2010

Ferdowsi University of Mashhad

BSc in Electrical Engineering – Communication Systems

Thesis | Designed a C++ library for encoding and decoding data storage buckets using probabilistic **LDPC** codes for reliable **error-correction**.

Industry

Summer 2021

Plumerai – London, UK

Research Intern

Optimization | - Explored **backpropagation-free training** of Binary Neural Networks (BNNs).
- Studied the relationship between generalization of BNNs and their **loss landscape**.

Summer 2019

Qualcomm AI Research – Amsterdam, Netherlands

Research Intern

Quantization | Worked in the AI research team led by **Max Welling** on designing **quantization-robust neural networks**, resulting in a paper at **ICLR 2020**.

2016 - 2017

Qualcomm Technologies – Cambridge, UK

Senior Software Engineer

Audio | Designed **audio signal processing algorithms** and developed embedded software frameworks optimized for speed, memory, and power consumption.

2011 - 2016

Imagination Technologies – Chepstow, UK

Leading Software Design Engineer

Bluetooth | - **Led** the design and development of the **Bluetooth 4.0 MAC** and **PHY** firmwares.
- Created the software/hardware testing framework using **Python** and **Jenkins** and successfully led the product through official **Bluetooth SIG qualification**.
- **Managed** a small team, performed **code reviews**, and **mentored** junior engineers.

TV | - Researched and developed **DSP algorithms** for various PHY blocks of TV receivers.
- Implemented and debugged algorithms in **assembly** and **C** for Imagination's in-house **SIMD DSP**. Ensured implementations were as **optimized** as possible.

Publications

- ICML 2022 Under Review - Emilien Dupont*, Hrushikesh Loya*, **Milad Alizadeh**, Adam Goliński, Yee Whye Teh, Arnaud Doucet. "COIN++: Data Agnostic Neural Compression."
- ICLR 2022 - **Milad Alizadeh**, Shyam A. Taylor, Luisa Zintgraf, Joost van Amersfoort, Sebastian Farquhar, Nicholas Lane, Yarín Gal. "Prospect Pruning: Finding Trainable Weights at Initialization using Meta-Gradients."
- ICLR 2021 Neural Compression Workshop **Spotlight** - Emilien Dupont*, Adam Goliński*, **Milad Alizadeh**, Yee Whye Teh, Arnaud Doucet. "COIN: COmpression with Implicit Neural representations."
- Pre-print - Joost van Amersfoort, **Milad Alizadeh**, Sebastian Farquhar, Nicholas Lane, Yarín Gal. "Single Shot Structured Pruning Before Training."
- ICLR 2020 - **Milad Alizadeh**, Arash Behboodi, Mart van Baalen, Christos Louizos, Tijmen Blankevoort and Max Welling. "Gradient L1 Regularization for Quantization Robustness."
- ICLR 2019 - **Milad Alizadeh**, Javier Fernández-Marqués, Nicholas Lane and Yarín Gal. "A Systematic Study of Binary Neural Networks' Optimisation."
- IJCAI 2018 - Vincent W.-S. Tseng, Sourav Bhattachara, Javier Fernández-Marqués, **Milad Alizadeh**, Catherine Tong and Nicholas Lane. "Deterministic Binary Filters for Convolutional Neural Networks."
- WPC 2015 Wireless Personal Communications Journal 83 - Rudzidatul Akmam Dziauddin, Dritan Kaleshi, Angela Doufexi, and **Milad Alizadeh**. "Performance evaluation of quality of service for joint packet dropping and scheduling."
- IEEE VTC 2012 - **Milad Alizadeh**, Rudzidatul Akmam Dziauddin, Dritan Kaleshi, and Angela Doufexi. "A comparative study of mixed traffic scenarios for different scheduling algorithms in WiMAX."

Software Skills

- day-to-day - Use **Python** in combination with **PyTorch**, **NumPy**, **JAX**, **Git**, **Shell scripts**, **Pandas**, **Slurm**, **Docker**.
- Passionate **Arch Linux** user and familiar with many **Linux subsystems**.
- Industry Experience - Coded in **C** for 5 years. Made models in **MATLAB**.
- Contributed to drivers and patches that were upstreamed to the **Linux kernel**.
- Portfolio The source-code for some of my recent papers and hobby projects are available on **my GitHub**. A recent example is "stui": a terminal-based dashboard for monitoring and managing Slurm clusters.

Honours

- Joint PhD scholarship from EPSRC and Arm.**
- IEEE UK/RI Communication Chapter Prize** for Best Communications-related MSc Project
- Ranked top 1%** in Iran's nationwide university entrance exam among **400,000+** students.
- Admitted to Iran's national educational programme for gifted students (NODET).

Interests

- When not behind a computer I can be found:
- Playing Kamanche – a traditional Persian instrument.
 - Playing squash.