# Millan Philipose

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## Education

**University of Washington, Seattle**
M.S. Computer Science, Sep. 2024 - June 2025 (expected)
B.S. Computer Science and Mathematics, Sep. 2020 - June 2024 (expected). GPA: 4.0.

## Skills

Cloud Computing, C/C++, Machine Learning, Django, Angular, React, Python, Mathematics

## Experience

*Research Assistant* — **University of Washington**
*June 2022 - present* — **Seattle, WA**

Investigating why gradient descent produces DNNs that generalize well.

- Running GPU-accelerated experiments to characterize the behavior of gradient descent on computer vision and NLP models.
- Developing mathematical proofs to explain the Edge of Stability phenomenon, which links step size to generalization.

*Research Intern* — **Microsoft**
*January 2021 - June 2021* — **Redmond, WA**

Built a low-latency (optimized C++), ultra-high throughput (horizontally scaling cloud functions) implementation of a radio signal processing system.

- Extended and Dockerized the GNURadio C++ package.
- Used Azure Functions and a Redis cache for scale.
- Implemented a novel radio demodulation algorithm in the cloud system.
- Published in SIGCOMM as second author.

*Software Engineering Intern* — **Microsoft**
*July 2019 - September 2019* — **Redmond, WA**

Developed a full-stack system to improve access to information on public transportation, resulting in prototype deployment authorized by transit authority CXO.

- Built an Azure Functions + Redis-based sensor data processing backend.
- Adapted the OneBusAway Android app to display bike rack availability data.
- Built a service to convert proprietary CCTV footage to a universal format, over 100x faster than existing tools.
- Tuned a PyTorch computer vision model to obtain passenger counts from light rail station footage. Achieved 95% accuracy.

## Publications

M. Shahid, M. Philipose, K. Chintalapudi, S. Banerjee and B. Krishnaswamy.
"Concurrent Interference Cancellation: Decoding Multi-Packet Collisions in LoRa," *SIGCOMM 2021.*

## Projects

**SPS Gradegrubber**
*Chrome Extension*

- Adds a what-if analysis tool and other features to the Seattle Public Schools gradebook.
- Gained 211 users at 5 schools over a span of 4 months, entirely on word of mouth.
- Perfect 5-star rating average on the Chrome Web Store.