

Piratach Yoovidhya

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Education

Carnegie Mellon University • Pittsburgh, PA

M.S. in Computer Science, Research Thesis (GPA: 4.08/4.33)

Expected August 2024

B.S. in Computer Science, Concentration in Computer Systems

May 2022

Selected Coursework:

15-740, Computer Architecture

17-715, Hardware Security

15-410, Operating Systems

15-852, Parallel and Concurrent Algorithms

15-451, Algorithm Design and Analysis

15-744, Graduate Computer Networks

Research Experience *(at Carnegie Mellon University)*

Simulating Cache Coherence for Cache-Attached Accelerators *(Aug 2023 - Present)*

- Builds on top of existing work on [Kobold](#), through a **model** in the **gem5** simulator.
- Designed and implemented various components of the system, including a memory access predictor, novel replacement policies, and various benchmarks (**C++** and **Python**).
- In collaboration with Professor Nathan Beckmann and PhD student Jennifer Brana.

Microarchitectural Simulation of Polymorphic Cache Hierarchy *(Jan 2022 - May 2022)*

- Simulated microarchitecture through a dataflow architecture on a CGRA in a **Zsim-based** simulator in **C++**.
- Allows for fine-grained instruction-level parallelism and flexibility over routing of inputs/outputs.
- In collaboration with Professor Nathan Beckmann and PhD students Brian Schwedock and Nikhil Agarwal.

[täkō](#): a polymorphic cache hierarchy *(Nov 2020 - May 2022)*

- Designed and implemented applications that show a significant speedup compared to the baseline cache.
- Identified potential problem in the system, where the callbacks would pollute the core's L2 with unused data. This is later addressed in [Kobold](#).
- Best paper nominee at ISCA'22.
- Collaborated with Professor Nathan Beckmann and PhD student Brian Schwedock.

Work Experience

Google LLC • Software Engineer • Sunnyvale, CA

(Aug 2022 - July 2023)

- Worked within Google Cloud Storage, designing and implementing a load generator used to generate prod-representative traffic.
- This is used to ensure changes are robust, and will not cause any issues when rolled out to production.

CMU CB Dept. • Research Programmer Assistant • Pittsburgh, PA

(Jan 2020 - May 2020)

- Worked with Professor Robert Murphy in implementing *Bioactive*, a program that is used to assist in research through active learning and model construction
- Fixed database issues that prevented several campaigns from working as intended
- Implemented a continuous modeler based on linear regression and modularized the code for other files

KBTG • Data Science Intern • Bangkok, Thailand

(Jun 2019 - Aug 2019)

- Worked in the data science team to develop a feature that evaluated the price of a car (for collateral) from a photo to be used in K-Plus, Thailand's #1 mobile banking app
- Successfully developed a license plate and vehicle image recognition model using Keras, and connected it to a pipeline that would function as a part of the vehicle price evaluation program

Notable Skills: C, C++, Python, CUDA, Modelling, Memory Systems, Accelerators, gem5, CPU Architecture, GPU Architecture, Low-power Computing, Cache Design