Jinsun Yoo

• jinsunyoo332@gmail.com • linkedin.com/in/jinsun-yoo • jinsunyoo.com • Google Scholar Profile

EDUCATION

Georgia Institute of Technology   *Atlanta, GA*
Ph.D Student, School of Computer Science   *Aug 2021 – May 2027 (expected)*
- Concentration: System support for novel workloads in largescale AI/ML and geo-distributed edge environments
- Advisors: Umakishore Ramachandran, Tushar Krishna

Seoul National University (SNU)   *Seoul, Korea*
Bachelor of Business Administration & Bachelor of Science in Computer Science and Engineering   *Mar 2014 – Feb 2021*

ONGOING PROJECTS

Harnessing Shifts in System on Distributed ML   *2022 – Present*
Advisor: Prof. Tushar Krishna, Georgia Institute of Technology
- Extracting and generating graph representations of arbitrary ML workload configuration in runtime for performance modelling and workload reconfiguration.
- Build a network testing framework that can run ML workloads on real network infrastructure without costly GPUs.
- Maintain the ASTRA-sim distributed ML simulator and provide tutorials and talks.

Funciton as a Service on the Edge (FaaSEdge)   *2022 – Present*
Advisor: Prof. Umakishore Ramachandran, Georgia Institute of Technology
- Design a programming model that abstracts the details of spatio-temporal semantics in FaaS applications for the Edge.
- Ensure correctness of function invocation and message passing despite client mobility, and use client mobility as a signal for better resource scheduling.

PUBLICATIONS

Towards a Standardized Representation for Deep Learning Collective Algorithms
Jinsun Yoo, William Won, Meghan Cowan, Nan(Ted) Jiang, Benjamin Klenk, Srinivas Sridharan, Tushar Krishna
Invited Journal Publication! *IEEE MICRO Special Issue, 2025*
IEEE Symposium on High-Performance Interconnects (HOTI), 2024

FEO: Efficient Resource Allocation for FaaS at the Edge
A.Sarma, **J.Yoo**, J.Sowan, U.Ramachandran, M.Lee
18th ACM International Conference on Distrubted and Event-Based Systems (DEBS), 2024

MicroEdge: A Low-Cost Edge Cluster System Architecture for Scalable Camera Processing
D.Cao*, **J.Yoo***, Z.Xu, E.Saurez, H.Gupta, T.Krishna, U.Ramachandran (**Equal contribution*)
Best Paper! *23rd ACM/IFIP International Middleware Conference (Middleware), 2022*

GRANTS AND AWARDS

NSDI'25 Student Grant   *May 2025*
CRNCH Research Fellowship Award   *Fall 2023*
Middleware'22 Best Paper Award   *November 2022*

WORK EXPERIENCE

NVIDIA   *Santa Clara, CA*
Software Engineer Intern, Ph.D   *September 2024 – December 2024*
- **ML Workload Optimization** Based on **PyTorch Compiler** Obtained Workload Representation Before Running on Hardware

Google   *Madison, WI*
Software Engineer Intern, Ph.D   *May 2023 – August 2023*
- Analyzed the workload of F1, Google's SQL engine, to support **multitenancy while guaranteeing performance isolation**.
                                                                                                                              Sunnyvale, CA
Software Engineer Intern, Ph.D   *May 2022 – August 2022*
- Prototyped an **emulation based testbed for BGP policy validation** using Kubernetes Network Emulation(KNE).
  - Identified edge cases which were **not detectable by previous test frameworks**.

COMMUNITY SERVICE

Artifact Evaluation Committee: *OSDI 24, ATC 24, ASPLOS 25, OSDI 25*

GT SCS Graduate Student Association, *Events Chair*   *May 2023 - April 2024*

TEACHING EXPERIENCE

Teaching Assistant: *CS6210 (Advanced Operating Systems)*   *Fall 2023*