MUHAMMET SOYTURK

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EXPERIENCE

GAMS, Software Engineer   Feb 2023 - Current

· Main developer and maintainer of an algebraic modeling language: GAMSPy.

· Contributed to several other products such as Transfer and Connect.

Technologies: Python, GAMS

RIKEN Center for Computational Science, Intern   Jun 2022 - Feb 2023

· Developed an adaptive pipeline parallelism training scheme for large-scale transformer models.

Technologies: Python, PyTorch, C++

Koc University, Research Assistant   Sep 2020 - Dec 2022

· A paper[1] on adaptive pipeline parallelism load balancer for large-scale transformer models is soon to be published.

· Published a paper[2] on a collective communication monitoring tool at EuroPar 2021.

Technologies: CUDA, C++, Python, NCCL, MPI

Barcelona Supercomputing Center, Intern   Jun-Sep 2019

· Implemented a fault injection framework to introduce soft and hard errors to parallel programs.

· Published a paper[3] on fault injection of modern undervolted SRAMs.

Technologies: Python, C++, gem5

Senfonico, Software Developer   Jun - Dec 2018

· Developed several web services including social networking services and corporate websites (Ronesans Holding).

Technologies: Javascript, PHP, MySQL

Solid Electron, Software Engineering Intern   Jun - Sep 2017

· Developed backend services for a mobile game including a REST API.

Technologies: Node.js, MongoDB

SELECTED PROJECTS

ComScribe   github/ComScribe

· A tool to identify communication among all GPU-GPU and CPU-GPU pairs in a single-node multi-GPU system.

Technologies: Python, C++, NCCL

Robot Box   github/robot-box

· Implemented a multiple navigation goal system that allows users to give instructions to their robots via browser.

Technologies: PHP, Javascript

EDUCATION

Computer Science, MS (GPA:3.5/4), Koc University, Istanbul/Turkey   Sep 2020 - Dec 2022

· Software Engineering teaching assistant (Spring 2022, Spring, 2021).

· Advanced Programming teaching assistant (Fall 2022, Fall 2021)

Computer Science, BS (GPA:3.65/4), Abdullah Gül University, Kayseri/Turkey   Sep 2016 - May 2020

· Pattern Recognition teaching assistant (Spring, 2019).

· GRE Quantitative: 166/170, TOEFL=100/120

SKILLS

Languages: Python Javascript, C++, Java   **Database:** MySQL, MongoDB

Libraries: PyTorch, CUDA, Express.js   **Tools:** Git, Docker, PyBind11

COMPETITIVE PROGRAMMING

· Finalist, ICPC Turkey Contest

· Finalist, ITU Competitive Programming Contest

· 5th place, Bilkent University Mobile Programming Hackathon

PUBLICATIONS

1. Soytürk, M.A, Wahib M., Unat, D. (soon to be published), "Adaptive Load Balancing for Large Scale Pipeline Parallelism".

2. Soytürk, M.A., Akhtar, P., Tezcan, E., Unat, D. (2022). "Monitoring Collective Communication Among GPUs"

3. Soyturk, M. A., Parasyris, K., Salami, B., Unsal, O., Yalcin, G., & Gomez, L. B. (2019). "Hardware Versus Software Fault Injection of Modern Undervolted SRAMs"