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.

· Published a paper[1] on elastic load balancing for dynamic LLMs.

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

SELECTED PROJECTS

GAMSPy github/GAMSPy

· Algebraic modeling interface of GAMS in Python.

Technologies: Python, GAMS

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 and Advanced Programming teaching assistant.

· Wrote a thesis[4] on load balancing of elastic pipelines for dynamic neural networks.

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++

Libraries: PyTorch, CUDA

Database: MySQL, MongoDB

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. (2023), "Elastic Load Balancing for Dynamic LLMs".
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"
4. Soyturk, M.A (2023), "Elastic Pipeline Load Balancing for Dynamic DNNs".