Hamidreza Ramezanikebrya

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Work Experience

Contractor, TELUS – Vancouver, Canada May 2023 – Jan 2024

- Tested an SDN mediation layer that translates proprietary vendor protocols into *open* solutions.
- Used Cisco NSO to implement the mediation layer via service and action packages.
- Developed Tcl-based automated tests for Cisco NSO service and action packages.

Teaching Assistant, UBC – Vancouver, Canada Jan 2022 – May 2025

- Supported students in building a distributed, in-memory key-value store on AWS.
- Designed interface schemas and message structures using Protocol Buffers to enable efficient and platform-agnostic serialization.
- Evaluated systems for sequential consistency, at-most-once semantics, and fault tolerance under concurrent workloads.
- Mentored debugging of multithreaded and multi-node applications involving concurrency, RPC, and failure recovery.

Scientific Intern, IST Austria – Klosterneuburg, Austria Aug 2020 – Oct 2021

- Integrated quantization-based lossy compression schemes into NVIDIA's Collective Communication Library (NCCL) primitives (e.g. AllReduce) to accelerate multi-GPU communication in federated learning workloads.
- Designed and tested GPU kernels using CUDA C++ and benchmarked performance on multi-GPU clusters (GeForce RTX 3090).
- Optimized NCCL's data transfer pipeline, delivering measurable speedups in PyTorch Distributed Data Parallel (DDP) multi-GPU training.

Research Intern, EPFL – Lausanne, Switzerland Jun 2019 – Aug 2020

- Optimized bulk-synchronous parallel (BSP) models for large-scale agent-based simulations.
- Implemented the Agent Domain-Specific Language (DSL) in Scala for defining agent behaviors, messaging protocols, and synchronization in distributed simulations.
- Contributed to code generation features that compile DSL constructs into optimized Scala code.

Education

University of British Columbia, M.A.Sc. in Computer Engineering Jan 2022 - Nov 2024
Research focus: High-Performance Computing, system-level performance modeling, and acceleration for memory-bound applications using Processing-in-Memory (PIM). More details are in the Publications section below.

Amirkabir University of Technology, B.Sc. in Software Engineering Sep 2014 - Oct 2019

Publications

Hamidreza Ramezanikebrya, and Matei Ripeanu. (re)Assessing Processing-in-Memory Effectiveness for Sequence Alignment. In *Euro-Par'24* ****Best Paper Award Nominee****.

Ilia Markov, **Hamidreza Ramezanikebrya**, and Dan Alistarh. CGX: Adaptive System Support for Communication-Efficient Deep Learning. In *Middleware'22* ****Best Paper Award Runner-up****.

Technical Skills

HPC: CUDA, NCCL, Numba, Perf, MPI, OpenMP, PThreads, Roofline, Likwid
Programming and Scripting: C, C++, Python, Java, Scala, Bash, Tcl
Data Analysis: NumPy, Pandas, Matplotlib, Jupyter, SQL
Edge & Embedded Platforms: Jetson AGX, Jetson Nano, Raspberry Pi
Tools & DevOps: Git, Vim, Docker, Cisco NSO, Postman, Yang, GitLab CI/CD, Kubernetes, GKE, GCP, AWS, Helm, Terraform, Packer, Protobuf