DEJAN GRUBISIC

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EDUCATION

Doctor of Philosophy | ***High Performance Computing*** Aug. 2019 – May 2024
Rice University | GPA: 3.56 Houston, TX

Master of Science | ***Big Data Architectures*** Aug. 2018 – May 2019
University of Novi Sad | GPA: 4.00 Novi Sad, Serbia

Bachelor of Science | ***Electrical and Computer Engineering*** Aug. 2014 – May 2018
University of Novi Sad | GPA: 3.96 Novi Sad, Serbia

For all passed courses check here All Courses

INTERNSHIPS AND WORK EXPERIENCE

Rice University Aug. 2019 – May 2024
Graduate student Houston, TX

- Developing GPU support for large-scale profiler - HPCToolkit
- Creating analysis techniques for GPU accelerated applications
- Developing profiler guided optimizations based on reinforcement learning - Compiler2

Meta Systems May 2022 – Dec. 2022
Machine Learning Research Intern New York City, NY

- Building reinforcement learning framework for optimizing tensor operations
- Extending LoopTool compiler for optimizing loop nests
- Building and tuning cost and policy deep learning models

Berkeley Lab Jun. 2021 – Sep. 2021
High Performance Computing Research Intern Berkeley, California

- Profiling and analysis of power consumption on multi node GPU applications

Rice University Jun. 2018 – Sep. 2018
Research intern Houston, TX

- Optimization of MADNESS (Multiresolution Adaptive Numerical Environment for Scientific Simulation) in Intel CnC workframe

Institute for High Performance Microelectronics Jun. 2017 – Sep. 2017
Hardware Engineer Intern Frankfurt O, Germany

- Profiling and Analysis of FFT implementation on Xtensa Platform in C
- Dhrystone Benchmark for FFT and theoretical analysis window functions

RESEARCH AND PROJECTS

Statistical Machine Learning
Kaggle challenge: NBME - Score Clinical Patient Notes

- Fine tuning Bert model to predict features from the patient notes (Python)

Artificial Inteligence
Pacwar: Finding the strongest gene by using genetic algorithms

- Hill climbing, genetic algorithm, finding local hills with K-means, defining scoring function and other tricks in (Python)

Multiprocessing
Lock free concurrent skip list

- Implemented using compare-and-swap atomic primitives and OpenMP (C)

Parallel Computing
Parallel algorithms in various technologies
- Parallel exploratory search of game Othelo using Cilk (C++)
- LU decomposition using OpenMP (C++)
- 2.5 matrix multiplication using OpenMPI (C++)
- Bitonic sort using Cuda (CudaC++)

Compiler Construction 2
Compiler for DEMOgram language
- Compiler for custom language implemented in Flex/Bison framework (C)

Compiler Construction 1
Compiler for ILOC language
- Implementating scanner, parser, registar allocator and instruction schedulers implemented (C++)

Master Thesis
Finding multi-source shortest path in dynamic large-scale graph, based on Lambda architecture
- Implementing batch and real-time processing algorithms (pySpark)
- Implementing storage in HDFS and communication in Kafka framework
- Creating web based application (Pyton Dash)
- Using Docker for containerization

Data Science
Movie profit prediction
- Predicting audience interest in movie by using logistic regression, k-nearest neighbor, support vector machines
- Predicting weekend profit for a movie by using linear regression, neural network, SVM and NaiveBayes

Bachelor Thesis
FPGA design of hardware core for acceleration of chess engine
- Analysis and design of software-hardware system using ESL methodology (SystemC)
- Implementing board evaluation module in VHDL
- Verification of design using UML methodology (SystemVerilog)

Applied Electronics
Metal Detector
- End-to-end implementation of circut, PCB and packing with AltiumDesigner

PUBLICATIONS

LoopTune: Optimizing Tensor Programs with Reinforcement Learning Jul. 2023
International Conference on Machine Learning (Under submission)

LoopStack: ML-friendly ML Compiler Stack Nov. 2022
Neural Information Processing Systems

Measurement and Analysis of GPU-Accelerated OpenCL Computations on Intel GPUs Nov. 2021
International Workshop on Programming and Performance Visualization Tools

An Automated Tool for Analysis and Tuning of GPU-accelerated Code in HPC Applications Feb. 2021
IEEE Transactions on Parallel and Distributed Systems

Measurement and Analysis of GPU-accelerated Applications with HpcToolkit Nov. 2020
Parallel Computing Journal

Finding multi-source shortest path in dynamic large-scale graph in Lambda architecture May 2019
Faculty of Technical Sciences in Novi Sad Journal

SKILLS

Programming Languages: C/C++, Python, CudaC, Java, Bash, VHDL

Technologies: Pthreads, OpenMP, MPI, Docker, Slurm, Spark, Linux

Featured Skills: Parallel Computing, Compiler Construction, Profiling Tools