Burak Bastem
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please check out my website for the details and more information

EXPERIENCE

Senior R&D Engineer, Yapı Kredi Teknoloji - Applied Data Science Team, Istanbul, Turkey **Aug 2020 – Present**

- Working on fraud focused machine learning projects: cross-channel fraud detection and employee fraud detection. Due to difficulty of the problem, projects are mainly research-focused and enriched with academic collaborations from respectable universities. The projects also involve HPC and big data solutions because of their data size.
- While studying, applying and developing state-of-the-art machine learning solutions in the research phase, implementing and integrating backend solutions in the release phase.
- Developed a proof-of-concept computer vision project about tracking social distance from camera footage.

Expert R&D Engineer, Yapı Kredi Teknoloji - Applied Data Science Team, Istanbul, Turkey **July 2018 – Aug 2020**

- Developed machine learning models for credit card fraud detection which involves providing solutions for extremely unbalanced class ratio and concept drift. Achieved better performance than proprietary model.
- Developed a pipeline to train and deploy models automatically and score credit card transactions in real-time <10ms.
- Represented the company and fulfilled the responsibilities as a data provider in European Data Incubator, a European Union H2020 project.

Research Assistant, Koç University Parcorelab, Istanbul, Turkey **June 2015 – April 2019**

- Implemented TiDA-C++, tiling based multi-threaded programming model to increase cache performance with data locality and manage parallelism. TiDA achieves up to 2.10x speedup over OpenMP and resulted in publication at ISC'16.
- Designed and developed TiDA-acc. TiDA-acc is a tiling-based GPU programming model which manages distinct address spaces, successfully hides transfer latency between CPU and GPU, automatically generates GPU code, handles cases where there is no sufficient GPU memory and is published at ICPP'17.
- Integrated TiDA-acc to SMC, a combustion simulation consisting of approximately 10,000 lines of code, and presented an article and a poster about the study at BAŞARIM'17, Turkey's national HPC conference.
- Developed a tiling-based high-level asynchronous programming model for GPU clusters using TiDA-acc. On top of TiDA-acc, it utilizes all GPUs (and CPUs) in the system, overlaps any type of communication with computation and achieves good speedup. The study is published at HPCAsia'20.

Teaching Assistant, Koç University, Istanbul, Turkey **Sept 2016 – July 2018**

- Assisted in teaching, supervision and assessment of Computer Architecture, Operating Systems and Parallel Programming courses, and received Teaching Assistant Training Certificate.

Research Assistant, Lawrence Berkeley National Laboratory, Berkeley, CA, US **July - Sept 2016**

- Studied existing GPU execution models and SMC implemented with AMReX, an AMR framework from Berkeley Lab, implemented GPU version of SMC kernels, and collaborated on TiDA-acc design.

EDUCATION

❖ **Koç University,** Graduate School of Sciences and Engineering, Istanbul, Turkey **2016 - 2019**
MSc in **Computer Science and Engineering,** GPA 3.88/4.00
Thesis: Tiling-Based Programming Model for GPU Clusters Targeting Structured Grids

❖ **Koç University,** College of Engineering, Istanbul, Turkey **2010 - 2016**
BSc in **Computer Engineering, BSc - Double Major** in **Industrial Engineering,**
Track Certificate Program in **Software Engineering,** GPA 3.18/4.00

PUBLICATIONS - Conference Proceedings

- **B. Bastem**, D. Unat, "Tiling-Based Programming Model for Structured Grids on GPU Clusters", International Conference on High Performance Computing in Asia-Pacific Region (HPCAsia), Fukuoka, Japan, January 2020
- **B. Bastem**, D. Unat, W. Zhang, A. Almgren, J. Shalf, "Overlapping Data Transfers with Computation on GPU with Tiles", International Conference on Parallel Processing (ICPP), Bristol, United Kingdom, August 2017
- D. Unat, T. Nguyen, W. Zhang, N. Farooqi, **B. Bastem**, G. Michelogiannakis, A. Almgren, J. Shalf, "TiDA: High-Level Programming Abstractions for Data Locality Management", International Supercomputing Conference (ISC), Frankfurt, Germany, June 2016

HONORS AND AWARDS

- Half Merit Scholarship, Koç University, Istanbul, Turkey **2010 - 2016**
- Dean's Honor Roll, Koç University, Istanbul, Turkey **Fall 2014, Fall 2015, Spring 2016**
- Vehbi Koç Scholar, Koç University, Istanbul, Turkey **Spring 2014, Spring 2015**

SKILLS

Language: ▪ Turkish-Native
▪ English-Advanced, KAPLAN International Certificate of Achievement, NYC, NY, US **Summer 2012**

Computer: Python, C++, Java, SQL, Docker, MongoDB, Redis, Hive, Spark, Pandas, scikit-learn, TensorFlow, CUDA, OpenACC, MPI, OpenMP