

Justin Miron

3556 North Rd, Clyde, MI - Email: miron2@illinois.edu - Phone: (810)-841-8557

EDUCATION

University of Illinois at Urbana-Champaign

August 2013 - May 2017

B.S. in Computer Engineering

GPA: 3.64

Senior Thesis: "Frameworks for efficient high performance computing in the cloud"

RELEVANT COURSEWORK

Distributed Systems, Machine Learning with Big Data, Networking with Big Data, Algorithms and Models of Computation, Graduate Distributed Algorithms, Network Flow and Dynamics (Spring 2017)

RESEARCH INTERESTS

Distributed systems, peer-to-peer networks, cloud computing

RESEARCH EXPERIENCE

Adaptive replication for scalable parallel processing

Senior Thesis

By allowing a parallel run-time system to adaptively replicate processing elements and manage requests to replicas, the system reduces the overhead of any given request on a processing element. Current work involves developing a replication cost model, identifying locations of replicas, and realizing necessary conditions for replication.

Elastic distributed computation for hpc in the cloud

Senior Thesis

Current work involves modifying a parallel runtime system to efficiently support elastic applications. Initial improvements optimized the existing elasticity framework based on a checkpoint-restart model. Recent work has been optimizing proactive fault tolerance frameworks for bulk operations, allowing for efficient shrinking of the number of processing elements in a computation.

Rendezvous protocol for no-copy RDMA

Parallel Programming Lab

This work involved realizing the capabilities of RDMA and messaging operations on CRAY supercomputers. Taking advantage of these capabilities allows for efficiently performing asynchronous RDMA operations in the parallel run-time system, Charm++, without requiring a copy of data.

Multi-producer multi-consumer lock-free queue

Parallel Programming Lab

Designed a multi-producer lock-free queue that supports a configurable memory upper bound and memory usage linear with the queue size. The queue handles memory reclamation efficiently through providing provable bounds on memory producers and consumers can access. It provided a 7% reduction on round-trip messaging within the runtime system of Charm++.

WORK EXPERIENCE

Research Assistant at Parallel Programming Lab

Urbana, IL - February 2016 to Present

I work to improve the adaptive parallel runtime system, Charm++. This work entails finding ways to reduce communication overhead, optimizing the system for a cloud environment, and fault tolerance work.

Software Engineer, Tools and Infrastructure Intern at Google

Seattle, WA - Summer 2016

Developed a network failure detector for the Google Compute Engine that used traceroutes, probing, and past network interactions to determine points of network failure during a virtual machine's life-cycle.

Software Engineering Intern at ViaSat Inc.

Carlsbad, CA - Summer 2015

Expanded the antenna control unit simulator to support real-time message modification, a graphical interface, and support for new antenna types.

TEACHING EXPERIENCE

Course Assistant for CS 225: Data Structures

Urbana, IL - August 2015 to Present

Teach students data structures and algorithms material involving trees, hash tables, heaps, and graphs. This included teaching multiple lab sections of up to 40 people and holding personal office hours.

HONORS AND AWARDS

Robert H. Jung and Lisa J. Chan Award

James Scholar Honors

PROGRAMMING SKILLS

Languages: C, C++, Python, Java

Parallel Programming & Systems: Pthreads, MPI, OpenMP, Charm++, Map-Reduce, Spark

CAMPUS INVOLVEMENT

Open Ears – President (August 2015 – February 2016) – openearsuiuc.com

Champaign-Urbana Humane Society - Volunteer

Habitat for Humanity - Member