

DANIEL NICHOLS

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1047 Bucktail Way, West Chester PA

EDUCATION

University of Tennessee, Knoxville

Undergraduate

Computer Science

August 2017 - Present

Overall GPA: 3.92/4.0

Major GPA: 4.0/4.0

RESEARCH EXPERIENCE

Joint Institute for Computer Science (JICS)

Oak Ridge National Laboratory,

University of Tennessee, Innovative Computing Laboratory

October 2018 - Present

Undergraduate Research Assistant

- Researched methods in distributed network training, parallel optimization, and computational linear algebra.
- Designed a deep learning framework MagmaDNN (github.com/MagmaDNN/magmadnn) to accelerate training on heterogeneous architectures.

JICS REU

Oak Ridge National Laboratory,

University of Tennessee

May - August 2019

Research Assistant

- Distributed network training applied on microscopy image data sets and Ising model simulations using MagmaDNN.

ACADEMIC ACHIEVEMENTS

Honors Computer Science

Honors Engineering

Dean's List, *University of Tennessee, Knoxville*

TEACHING EXPERIENCE

Undergraduate Teaching Assistant

University of Tennessee

Fall 2019

COSC 140 - Data Structures and Algorithms I

PUBLICATIONS

MagmaDNN: Towards High-Performance Data Analytics and Machine Learning for Data-Driven Scientific Computing

- **Daniel Nichols**, Nathalie-Sofia Tomov, Frank Betancourt, Stanimire Tomov, Kwai Wong, and Jack Dongarra, 2019. MagmaDNN: Towards High-Performance Data Analytics and Machine Learning for Data-Driven Scientific Computing. In ISC '19 Workshop Proceedings.

MagmaDNN: Accelerated Deep Learning Using MAGMA

- **Daniel Nichols**, Kwai Wong, Stan Tomov, Lucien Ng, Sihan Chen, and Alex Gessinger. 2019. MagmaDNN: Accelerated Deep Learning Using MAGMA. In Practice and Experience in Advanced Research Computing (PEARC 19), July 28-August 1, 2019, Chicago, IL, USA.ACM.

openDIEL: A Parallel Workflow Engine and Data Analytics Framework

- Frank Betancourt, Kwai Wong, Efosa Asemota, Quindell Marshall, **Daniel Nichols**, Stan Tomov. 2019. openDIEL: A Parallel Workflow Engine and Data Analytics Framework. In Practice and Experience in Advanced Research Computing (PEARC 19), July 28-August 1, 2019, Chicago, IL, USA.ACM.

NON-PEER-REVIEWED PAPERS

MagmaDNN: Towards High-Performance Deep Learning Using Magma

- **Daniel Nichols**, Sedrick Keh, Kam Fai Chan. 2019. MagmaDNN: Towards High-Performance Deep Learning Using Magma. JICS REU Final Report. jics.utk.edu/files/images/recsem-reu/2019/magmadnn/Report.pdf

MagmaDNN: Applications in Materials Science

- Sedrick Keh, **Daniel Nichols**, Kam Fai Chan. 2019. MagmaDNN: Applications in Materials Science. JICS REU Final Report. jics.utk.edu/files/images/recsem-reu/2019/materials/Report.pdf

Ising Physics Simulations using MagmaDNN

- Kam Fai Chan, Sedrick Keh, **Daniel Nichols**. 2019. Ising Physics Simulations using MagmaDNN. JICS REU Final Report. jics.utk.edu/files/images/recsem-reu/2019/materials/Report.pdf

RELEVANT COURSES

Core Courses

Hon. Algorithms and Data Structures I & II
 Hon. Discrete Structures
 Parallel Computing
 Systems Programming
 Pattern Recognition
 Advanced Algorithms & Data Structures

Hon. Calculus I-III
 Graph Theory
 Probability and Random Variables
 Operating Systems
 Algorithm Analysis
 Matrix Algebra

RESEARCH STRENGTHS

Computer Languages

C/C++, Python, Julia, Fortran, CUDA

Software & Tools

LaTeX, Excel, Mathematica, Matlab, Matplotlib

Deep Learning

Tensorflow, PyTorch, MxNet, keras

Parallel & Scientific Computing

LAPACK, BLAS, MAGMA, MPI, OpenMPI, CUDA, LINPACK, IntelMKL, NCCL

Language

English, German (read & write)