DANIEL NICHOLS

(+1)610-350-1281 ⋄ danielnichols1998@gmail.com
web.eecs.utk.edu/∼dnicho22
1047 Bucktail Way, West Chester PA

EDUCATION

University of Tennessee, Knoxville *August 2017 - Present*
Undergraduate Overall GPA: 3.92/4.0
Computer Science Major GPA: 4.0/4.0

RESEARCH EXPERIENCE

Joint Institute for Computer Science (JICS) October 2018 - Present
Oak Ridge National Laboratory,
University of Tennessee, Innovative Computing Laboratory *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 May - August 2019
Oak Ridge National Laboratory,
University of Tennessee *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 Fall 2019
University of Tennessee

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.

PRESENTATIONS & TALKS

MagmaDNN: Accelerated Deep Learning Using MAGMA

· In *Performance Evaluation and Improvement* session at PEARC '19. ACM.
`https://pearc19.conference-program.com/session/?sess=sess196`

Distributed and High Performance Deep Learning

· Innovative Computing Laboratory Talk.
`http://icl.cs.utk.edu/newsletter/presentations/2019/Nichols-MAGMADNN-08-30-2019.pdf`

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. Calculus I-III
Hon. Discrete Structures	Graph Theory
Parallel Computing	Probability and Random Variables
Systems Programming	Operating Systems
Pattern Recognition	Algorithm Analysis
Advanced Algorithms & Data Structures	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)