

# DANIEL NICHOLS

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1047 Bucktail Way, West Chester PA

## EDUCATION

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**University of Tennessee, Knoxville**

Undergraduate

Computer Science

*August 2017 - Present*

Overall GPA: 3.92/4.0

Major GPA: 4.0/4.0

## RESEARCH EXPERIENCE

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**Innovative Computing Laboratory &**

**Joint Institute for Computer Science (JICS)**

*Oak Ridge National Laboratory,*

*University of Tennessee, Innovative Computing Laboratory*

October 2018 - Present

*Undergraduate Research Assistant*

**JICS REU**

*Oak Ridge National Laboratory,*

*University of Tennessee*

May - August 2019

*Research Assistant*

## ACADEMIC ACHIEVEMENTS

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Honors Computer Science

Honors Engineering

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

## TEACHING EXPERIENCE

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**Undergraduate Teaching Assistant**

*University of Tennessee*

Fall 2019

COSC 140 - Data Structures and Algorithms I

## PUBLICATIONS

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

- **Daniel Nichols**, Natalie-Sofia Tomov, Frank Betancourt, Stanimire Tomov, Kwai Wong, and Jack Dongarra, MagmaDnn: Towards high-performance data analytics and machine learning for data-driven scientific computing, ISC High Performance (Frankfurt, Germany), Workshop, Springer International Publishing, Springer International Publishing, 2019-06 2019.

**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

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### 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

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### 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](https://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](https://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](https://jics.utk.edu/files/images/recsem-reu/2019/materials/Report.pdf)

## SOFTWARE PROJECTS

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### MagmaDNN

*high performance deep learning framework*

[github.com/MagmaDNN/magmadnn](https://github.com/MagmaDNN/magmadnn)

## AWARDS & FUNDING

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UT Volunteer Scholarship (x3)

Herbert & Lillian Duggan Scholarship

Edgar Wyman McCall Scholarship (x2)

Frederick T Bonham Scholarship

Harlan D Mills Scholarship (x2)

Henry, Robert & Velma Scholarship (x2)

## RELEVANT COURSES

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### Core Courses

Hon. Algorithms and Data Structures I & II

Hon. Discrete Structures

Parallel Computing

Systems Programming

Pattern Recognition

Advanced Algorithms & Data Structures

Compilers

Hon. Calculus I-III

Graph Theory

Probability and Random Variables

Operating Systems

Algorithm Analysis

Matrix Algebra

## RESEARCH STRENGTHS

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**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

**Community Involvement**

Active Math.StackExchange User (~58k people reached)

[math.stackexchange.com/users/274085](https://math.stackexchange.com/users/274085)

**Language**

English, German (read & write)