DANIEL NICHOLS

(+1)610-350-1281 ⋄ danielnichols1998@gmail.com
cs.umd.edu/ dnicho
1047 Bucktail Way, West Chester PA

EDUCATION

University of Maryland, College Park *June 2020 - Present*
PhD, Computer Science
Advisor: Abhinav Bhatele

University of Tennessee, Knoxville *August 2017 - May 2020*
Undergraduate Overall GPA: 3.93/4.0
Computer Science Major GPA: 4.0/4.0

RESEARCH EXPERIENCE

University of Maryland, College Park June 2020 - *Present*
In collaboration with Lawrence Livermore National Laboratory *Graduate Research Assistant*

Innovative Computing Laboratory &
Joint Institute for Computer Science (JICS) October 2018 - May 2020
Oak Ridge National Laboratory,
University of Tennessee, Innovative Computing Laboratory *Undergraduate Research Assistant*

JICS REU May - August 2019
Oak Ridge National Laboratory,
University of Tennessee *Research Assistant*

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

Integrating Deep Learning in Domain Sciences at Exascale

· R. Archibald, E. Chow, E. D'Azevedo, J. Dongarra, M. Eisenbach, R. Febbo, F. Lopez, **D. Nichols**, S. Tomov, K. Wong, and J. Yin, SMC 2020, (2020).

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

How to build your own Deep Neural Network Framework

· Half-day tutorial at PEARC '20. ACM.
`https://pearc.acm.org/pearc20/program/schedule/`

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`

SOFTWARE PROJECTS

MagmaDNN `github.com/MagmaDNN/magmadnn`
high performance deep learning framework

AWARDS & FUNDING

UT Volunteer Scholarship (x3)
Herbert & Lillian Duggan Scholarship
Edgar Wyman Mccall Scholarship (x2)
Dean's Fellowship - UMD
Frederick T Bonham Scholarship
Harlan D Mills Scholarship (x2)
Henry, Robert & Velma Scholarship (x2)

RELEVANT COURSES

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

Computer Languages	C/C++, Python, Julia, Fortran, CUDA, Javascript
Software & Tools	LaTeX, Excel, Mathematica, Matlab, Matplotlib, OpenGL/WebGL
Deep Learning	Tensorflow, PyTorch, MxNet, keras, MagmaDNN
Parallel & Scientific Computing	Spack, LAPACK, BLAS, MAGMA, MPI, OpenMPI, CUDA, LINPACK, OneAPI, NCCL
Community Involvement	Active Math.StackExchange User (∼76k people reached) `math.stackexchange.com/users/274085`
Language	English, German (read & write)