DANIEL NICHOLS

(+1)610-350-1281 ⋄ dnicho@umd.edu
cs.umd.edu/∼dnicho
3424 Tulane Drive Apt. 12, Hyattsville MD

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*

Lawrence Livermore National Laboratory June 2022 - August 2022
Computational Sciences *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*

COMMUNITY INVOLVEMENT

IEEE Cluster Conference 2022, Web Co-Chair
IEEE TPDS Reviewer (x2)
Supercomputing reviewer (x2)
IPDPS reviewer

ACADEMIC ACHIEVEMENTS

GRFP Honorable Mention
Honors Computer Science
Honors Engineering
Dean's List, *University of Tennessee, Knoxville*
Summa Cum Laude, *University of Tennessee, Knoxville*

TEACHING EXPERIENCE

Undergraduate Teaching Assistant Fall 2019
University of Tennessee

COSC 140 - Data Structures and Algorithms I

PUBLICATIONS

Resource Utilization Aware Job Scheduling to Mitigate Performance Variability
Daniel Nichols, Aniruddha Maratha, Kathleen Shoga, Todd Gamblin, and Abhinav Bhatele. "Resource Utilization Aware Job Scheduling to Mitigate Performance Variability." To appear in IPDPS 2022.

A Survey and Empirical Evaluation of Parallel Deep Learning Frameworks
Daniel Nichols, et al. "How to Train Your Neural Network: A Comparative Evaluation." arXiv preprint arXiv:2111.04949 (2021).

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`

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. 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
Compilers	Mechanism Design for Social Good

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 (∼114k people reached) `math.stackexchange.com/users/274085`
Language	English, German (read & write)