

NICHOLAS R. DAVID

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📍 Ann Arbor, MI, USA

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🌐 github.com/nrdavid

EXPERIENCE

Ph.D. Candidate, NSF GRFP Fellow

Sun Group @ University of Michigan

📅 Aug 2022 – Now

📍 Ann Arbor, MI

- Developing new, data driven predictive theories of inorganic materials synthesis through Bayesian methods
- Machine-processing 377,847 graduate applications for improving DEI in higher education using large language models. Awarded \$75,000 MIDAS PODS grant
- Graduate Student Instructor (GSI) for MATSCIE 532 Advanced Thermodynamics of Materials

Undergraduate Research

Rollett Group @ Carnegie Mellon University

📅 Aug 2021 – May 2022

📍 Pittsburgh, PA

- Data mined over 50,000 materials science abstracts to train materials science BERT language model
- Utilized unsupervised learning algorithms, t-SNE and UMAP, to understand hidden structures within materials science language
- Implemented two materials science word2vec models for classifying abstracts' relevancy to superalloys

Undergraduate Research Fellowship

LIQUID Group @ Carnegie Mellon University

📅 Aug 2020 – May 2022

📍 Pittsburgh, PA

- Synthesized thin film heterostructures using molecular beam epitaxy (MBE) for potential electronic applications
- Characterized thin films using XRD & AFM
- Fabricated shutter & motor boxes for the automation of lab equipment through LabView

Software Test Engineer

Pitney Bowes

📅 Jun 2019 – Aug 2019

📍 Shelton, CT

- Tested and programmed the mailing application for Sendpro™ device
- Updated deprecated libraries to streamline custom android widgets
- Compiled test reports and analyzed errors to be remedied

Cybersecurity Intern

IBM

📅 May 2018 – Jul 2018

📍 Armonk, NY

- Analyzed penetration reports and developed multifaceted techniques to protect the companies crown jewel data
- Tested encryption software to be used by 300,000+ employees and 25,000+ customers
- Compiled and presented methodologies to protect internet facing applications to VP of Enterprise and Technology & Security

EDUCATION

Ph.D. Candidate, Materials Science Engineering + Scientific Computing

University of Michigan

📅 Aug '22 – May '27

📍 Ann Arbor, MI

- 4.0/4.0 GPA | NSF GRFP Fellow

B.S. Materials Science Engineering
Additional Major Applied Physics

Carnegie Mellon University

📅 Aug '18 – May '22

📍 Pittsburgh, PA

- 3.72/4.0 GPA | University Honors

PUBLICATIONS

- David, N., Sun, W. & Coley, C.W., "The promise and pitfalls of AI for molecular and materials synthesis" *Nat. Comput. Sci.* **3**, 362-364 (2023).
- Sun, W.[†], David, N.[†], "A critical reflection on attempts to machine-learn materials synthesis insights from text-mined literature recipes" *Faraday Discuss.* (2024).

PRESENTATIONS

Oral

- "Machine-Processing of Graduate Student Applications for Diversity, Equity and Inclusion", *MIDAS PODS Showcase*. Ann Arbor, MI (2023).

Poster

- "A critical reflection on attempts to machine-learn materials synthesis insights from text-mined literature recipes", *Gordon Research Conferences*. Newry, Maine (2024).
- "Optimization of Molecular Beam Epitaxial Growth of thin films of a three-dimensional Dirac semimetal", *March APS Meeting*. Chicago, Illinois (2022).

PROGRAMMING

Python C Java R Matlab

LabView LaTeX

NumPy Pandas Transformers

TensorFlow PyTorch pymatgen

Git Docker Kubernetes OpenShift