NICHOLAS R. DAVID

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EXPERIENCE

Ph.D. Pre-Candidate

Sun Group @ University of Michigan

Aug 2022 – Now Ann Arbor, MI

- Developing new, data driven predictive theory of inorganic materials synthesis through Bayesian methods
- Machine-processing over 100,000 graduate applications for improving diversity, equity, and inclusion using large language models
- Constructing high dimensional, free energy surfaces from materials properties

Undergraduate Research

Rollett Group @ Carnegie Mellon University

Aug 2021 – May 2022 Pittsburgh, PA

- Implemented two materials science word2vec models for classifying abstracts' relevancy to superalloys
- Utilized unsupervised learning algorithms, t-SNE and UMAP, to understand hidden structures within gathered abstracts
- Fine-tuned a pre-trained materials science BERT language model for abstract classification
- Data mined over 50,000 materials science abstracts for training a multiclass classifier

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
- Disseminated work at American Physcial Society (APS) March Meeting 2022

Software Test Engineer

Pitney Bowes

Jun 2019 – Aug 2019 Shelton, CT

- Tested and programmed the mailing application for Sendpro^{TM} sending device
- Updated deprecated libraries in Android Studio 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

B.S. Materials Science Engineering
Additional Major Applied Physics

Carnegie Mellon University

May 2022 Pittsburgh, PA

- 3.72/4.0 GPA | University Honors

High School Diploma

Ridgefield High School

Graduated Jun 2018 Ridgefield, CT

- 4.5/4.5 GPA | High 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). https://doi.org/10.1038/s43588-023-00446-x

PROGRAMMING

Python | C | Java | R | Matlab | LabView | LaTeX

NumPy | scikit-learn | Pandas | Transformers | TensorFlow | PyTorch | Materials Project

Git | Docker | Jira | Jekyll

COURSEWORK

Machine Learning | Algorithms | Bayesian Statistics | Natural Language Processing | Solid-state Physics | Thermodynamics | Kinetics

INTERESTS

Computational Materials Science | Materials Synthesis | Data Science | Soccer | Cooking | Travel