

# Ryan Strauss

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## Education

- 2020–Present **Ph.D. in Computer Science**, *University of North Carolina*, Chapel Hill.  
2016–2020 **B.S. in Computer Science**, *Davidson College*, *Magna Cum Laude with Honors*.  
Advisor: Tabitha Peck

## Experience

### Research

- 2020–Present **Research Assistant**, *University of North Carolina*.  
Advisor: Junier Oliva  
Developing systems that can reason about how to acquire missing information.
- 2019–2020 **Undergraduate Honors Thesis**, *Davidson College*.  
Task-aware agents for multi-task reinforcement learning.
- 2019–2020 **Undergraduate Research Fellow**, *Davidson College DRIVE Lab*.  
Deep reinforcement learning for redirected walking in virtual reality.
- 2018–2019 **Undergraduate Research Fellow**, *Davidson College ALPhA Lab*.
  - Generative adversarial networks for the modeling of nuclear reactions.
    - Collaboration with ETHER Group at Jefferson National Lab.
  - Convolutional neural networks for the accurate classification of nuclear reaction products.
    - Collaboration with AT-TPC Group at National Superconducting Cyclotron Laboratory.

### Teaching

- 2019–2020 **Teaching Assistant**, *Davidson College*.  
Held office hours and extra help sessions for Data Structures course.
- 2019 **Teaching Assistant**, *FRIB-TA Machine Learning Summer School*.  
Created deep learning lecture materials and exercises, and provided help for attendees.
- 2018 **Teaching Assistant**, *Davidson College*.  
Redesigned a web development course and created assignments and assessment materials.

### Other

- 2020 **Software Developer**, *FinSiteful*.  
Contributed to initial development of student-oriented financial management iOS app.
- 2017-2019 **Lead Student Employee**, *Davidson College Makerspace*.  
Actualized creative projects for community members within areas such as 3D printing, virtual reality, Raspberry Pi, drones, milling, and laser cutting.
- 2018 **Software Developer**, *Project PRONTO*.  
Developed web applications aimed at solving problems in the Davidson community.

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## Awards

2020 **Senior Computer Science Award**, *Davidson College*.

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## Publications

- [1] Michelle Perry Kuchera, Raghuram Ramanujan, Jack Z Taylor, **Ryan R Strauss**, Daniel Bazin, Joshua Bradt, and Ruiming Chen. Machine learning methods for track classification in the at-tpc. *Nuclear Instruments and Methods in Physics Research Section A: Accelerators, Spectrometers, Detectors and Associated Equipment*, 940:156–167, 2019.
- [2] **Ryan R Strauss**, Raghuram Ramanujan, Andrew Becker, and Tabitha C Peck. A steering algorithm for redirected walking using reinforcement learning. *IEEE Transactions on Visualization and Computer Graphics*, 26(5):1955–1963, 2020.

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## Presentations

- [1] A Steering Algorithm for Redirected Walking Using Reinforcement Learning, *IEEE Transactions on Visualization and Computer Graphics*, 2020.
- [2] Fairness and Explainability in AI, *Jay Hurt Hub for Innovation and Entrepreneurship*, 2019.
- [3] Task-Aware Multi-Task Agents, *Davidson College Computer Science Coffee*, 2019.
- [4] Machine Learning for Scientific Discovery, *Davidson College Computer Science Coffee*, 2018.

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## Skills

### Languages

Python, Java, C/C++, C#, JavaScript, Swift, Scheme, Prolog

### Tools

TensorFlow, Scikit-Learn, NumPy, Pandas, Matplotlib, Plotly, Git/GitHub, L<sup>A</sup>T<sub>E</sub>X, Unity3D, SwiftUI

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## Coursework

### Computer Science

Machine Learning, Machine Reasoning, Natural Language Processing, Theory of Computation, Analysis of Algorithms, Operating Systems, Data Visualization, Web Development, Programming Languages, Game Theory, Concurrent & Parallel Computing, Databases

### Mathematics

Mathematical Modeling, Linear Algebra, Discrete Structures, Linear and Discrete Optimization, Graph Theory

### Independent Study

Multi-task Deep Reinforcement Learning, AI Fairness & Explainability, Supervised & Unsupervised Deep Learning Methods for Nuclear Physics