

# Tung D. Nguyen

in tungnguyen21,  tungnguyen1234  
tdn84d@mail.missouri.edu  
(765) 307-8028

I am completing my dual degrees in mathematics and physics with a 4.0 GPA and with strong academic achievements. I have held important research positions involving applications to optimization, artificial intelligence, especially machine learning (ML) and reinforcement learning (RL), and quantum computing (QC). I have strong programming skills with three years of experiences and am looking for a position in which I can strengthen technical skills and can produce strong research outcomes from cutting-edge research at private sectors.

## Education

- 
- University of Missouri - Columbia**, Columbia, MO Expected 2021
- B.S. in Mathematics and B.S. in Physics, GPA: 4.0/4.0.
  - College of Arts & Sciences Undergraduate Research and Creativity Activity Program Fellowship, Summer 2020 term, among 6 recipients chosen from 15 applicants.
  - Level I - Transfer Scholarship award, University of Missouri – Columbia (2019).
- Wabash College**, Crawfordsville, IN Aug 2017 – May 2019
- Math and Physics double major. GPA: 3.92/4.0.
  - Team member, placed 1st out of 64 teams, Alma Michigan Autumn Take Home Math Challenge (2018).
  - Wabash College President’s Merit-based Scholarship for undergraduate study.

## Professional Experience

- 
- 1. Recommender Systems Student Researcher** May 2020 — Present
- Dr. Jeffrey Uhlmann, Computer Science Department, University of Missouri - Columbia, MO.
- Constructed the unit-invariance multi-dimensional scaling algorithm for recommender system’s problem.
  - Independently showed the algorithm’s convergence by proving Kuhn-Tucker conditions for our optimization model.
  - Coded the algorithm on MATLAB to predict users’ ratings on films from the 1M MovieLens dataset.
- 2. Scientific Computing Student Researcher** June 2019 — August 2019
- Dr. Matthew Zahr, Mechanical Engineering Department, University of Notre Dame, IN.
- Implemented pre-built Finite Element Method codes on topological optimization of cardiovascular stent.
  - Did literature review to identify three external forces on arteries, constructed the objective function for one of those forces, and optimized the structure down to 50%.
- 3. RL Research Volunteer** May 2020 — August 2020
- Vietnam RL Research Group.
- Trained the playing agents of selected ATARI games with RAM inputs by adapting Actor-Critic Method, Recurrent Neural Network, and Attention Mechanism and processing through NVIDIA Tesla K80 GPU by CUDA semantics to increase agent’s performance.
- 4. ML Student Researcher** October 2019 – February 2020
- Advanced Manufacturing Lab, University of Missouri – Columbia, MO.
- Collected experimental data over 100 journal papers in a team of three researchers.
  - Assisted in building ML model by using Multilayer Perceptron and Leave-One-Out cross-validation.
- 5. Quantum Materials Student Researcher** August 2019 – May 2020
- Dr. Guang Bian, Department of Physics and Astronomy, University of Missouri – Columbia, MO.
- Simulated potential materials structures that can be considered for QC applications from searching through two different materials’ databases.
  - Took leadership on instructing two undergraduate students.

## Publications and Presentations

---

- **Tung D. Nguyen**, Jeffrey Uhlmann. *Canonical Tensor Scaling*. In *ArXiv e-prints*. ArXiv: 2009.01175 [math.NA]. <https://arxiv.org/abs/2009.01175>, September 2020.
- **Tung D. Nguyen** and Matthew Zahr. *Topological optimization on the cardiovascular stent through compliance, longitudinal, and dogbonning effects*. University of Notre Dame, IN, August 2018.
- **Tung D. Nguyen** and Nhan D. Nguyen, James Brown. *Monte-Carlo simulation of the Helium atom's dynamics*, github: nnguyen19/helium-project. Wabash College, IN, February 2019.
- **Tung D. Nguyen**, James Brown. *Simulation of the 2-Dimensional Ising model*, github: 2-Dimensional-Ising-Model-. Wabash College, IN, May 2019.

## Technical Skills

---

### Languages and Technologies

- Python (Pandas, Numpy, Seaborn, Matplotlib.pyplot, PyTorch, TensorFlow, Skicit-Learn, Scipy), MATLAB, Java.
- Eclipse, PyCharm, XCode, Microsoft Visual Studio.
- Jupyter, Google Colab.

### Coursework

- Introduction to Probability Theory, Matrix Theory, Partial Differential Equations, Topology, Complex Analysis, Computational Physics on Python, Quantum Mechanics, Introduction to Density Functional Theory.

### MOOCs

- Algorithm Toolbox, Data Structures, Neural network and Deep learning, Algorithm on Graphs.

### Languages

- Vietnamese (Fluent), English (Fluent), German (Familiarity).