

Derrick Wigglesworth

derrick.wigglesworth@gmail.com | 301.802.1431 | www.drwiggle.com

SKILLS

PROGRAMMING

Python Jupyter

SQL tensorflow

openCV pandas

scikitlearn nltk

numpy

MACHINE LEARNING

Natural Language Processing

Neural Networks

Naive Bayes (w/ smoothing)

Support Vector Machines

K-means Clustering

Q-Learning, Regression

Linear Programming

Backtracking

Hidden Markov

AWARDS

- Outstanding Grad Student Award, 2017.
- Outstanding Senior Award, 2012.
- Higginbotham Award, 2011.

LINKS

Github:// [drwiggle](https://github.com/drwiggle)

LinkedIn:// [drwiggle](https://www.linkedin.com/in/drwiggle)

EDUCATION

DATA SCIENCE

ONLINE COURSES

- CS50: AI with Python
- Relational Databases & SQL

PHD, MATHEMATICS

UNIVERSITY OF UTAH

May 2018 | Salt Lake City, UT

Thesis: [The geometry of \$Out\(F_n\)\$ through completely split train tracks](#)

BS, MATHEMATICS

BS, PHYSICS

UNIVERSITY OF MARYLAND

May 2012 | College Park, MD

Magna Cum Laude

PROJECTS

IMAGE CLASSIFIER | DESIGNED DNN TO CATEGORIZE IMAGES

- Devised a deep neural network using TensorFlow to classify road signs from the German Traffic Sign Recognition Benchmark (GTSRB) dataset: a difficult dataset with 43 classification categories.
- After applying image enhancement techniques, I implemented a combination of convolutions, pooling, batch normalization, and dropout within the neural network, which was trained using a stochastic gradient descent algorithm (adam).
- Model achieves accuracy of 97 – 98% on the testing dataset in a short amount of time using modest computing capacity.

QUESTION ANSWERING | CREATED NLP AI TO ANSWER QUERIES

- AI searches a corpus for the most relevant passages to answer query.
- Implemented tokenization to parse corpus of documents.
- TF-IDF method to determine most relevant documents, then TF to identify most relevant passage within said documents.

EXPERIENCE

UNIVERSITY OF ARKANSAS | VISITING ASSISTANT PROFESSOR

Jan 2019 – Aug 2021 | Fayetteville, AR

- Orchestrated and taught several classes each semester with minimal supervision:
 - Cultivated relationships with students in class and office hours.
 - Prepared and graded course materials, including lectures, handouts, worksheets, homework, projects, tests, and quizzes.
 - Employed novel pedagogical tools (e.g., standards based grading, flipped classroom, extensive groupwork, and Python projects) to enhance student experience and learning.
- Service to department:
 - Supervised undergraduate research on graph theory.
 - Volunteered with Math Olympiad for Elementary and Middle School students.
- Continuation of research in geometric group theory (details below).

THE FIELDS INSTITUTE | POSTDOCTORAL FELLOW

July 2018 – Jan 2019 | Toronto, Ontario, Canada

- Collaborated with colleagues to discover and quantify new phenomena concerning the geometric structure of groups, using techniques from geometry, topology, and dynamics.
- Co-authored research papers to be published in high quality journals.
- Presented research at local, national, and international conferences.

UNIVERSITY OF UTAH | GRADUATE TEACHING ASSISTANT

Aug 2012 – May 2018 | Salt Lake City, UT

- Taught undergraduate courses each semester, including calculus (I, II, and III), linear algebra, discrete mathematics, trigonometry, quantitative reasoning.
- Served on department & scholarship committees, and mentored younger graduate students in their teaching/research.