Derrick Wigglesworth

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SKILLS

PROGRAMMING

Python | Jupyter | SQL | tensorflow | openCV | pandas | scikitlearn | nltk | numpy | git | LaTeX

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
LinkedIn:// 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

- Contribution to research advancements in the field of geometric group theory.
  - Collaborated with colleagues to discover and quantify new phenomena concerning the geometric structure of groups, often using Python as an investigatory tool.
  - Published research papers in high quality journals.
  - Shared our research at local, national, and international conferences.
  - Set and achieve short-term and long-term research agenda.
- Orchestrated and taught several classes each semester with minimal supervision:
  - Cultivated relationships with students in class and office hours.
  - Managed deadlines when preparing and grading course materials, including lectures, handouts, worksheets, homework, projects, tests, and quizzes.
  - Employed novel pedagogical tools (e.g., Python projects, standards based grading, flipped classroom) 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.

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.