Nikhil Tilak

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"Physicist looking forward to applying a diverse skill set to tackle important challenges in industry."

Selected Data Projects

Bookend Final project for Data Bootcamp (1st place winners) GitHub, App

- Trained an ensemble classifier model on books scraped from project Gutenberg which can predict the authorship of a snippet of text with a 93% accuracy.
- Led a team of four and was responsible for dividing tasks and establishing a GitHub-based workflow to maximize productivity.
- Extracted text features and implemented a bag-of-words model which gave the highest prediction accuracy score (85%) among the models considered.
- Presented the results to judges from industry and others in a short video format.

Sudoku-Solver Solve a Sudoku puzzle correctly given an image. Github

- A custom image processing pipeline splits the Sudoku into one image per cell (81 images total).
- A neural network trained on printed digits, then identifies the filled in digits with 83% accuracy
- The Sudoku is then solved using a straightforward algorithm.
- Version 2 can accept images of printed Sudokus taken with a phone which can be at an arbitrary angle.

IMDB Movie review sentiment analysis Kaggle dataset containing 50K movie reviews Kaggle kernel

- Trained a neural network to predict if a given movie review is "positive" or "negative".
- Used a word2vec model trained on the reviews to generate word embeddings.
- Model achieved 87% accuracy.

BreweryXplorer Personal project GitHub, Dashboard

- Browse and search 3000+ breweries and pubs in the Unites States.
- Scraped and cleaned unstructured brewery data gathered from Wikipedia and other sources.
- Designed an interactive Dashboard using Dash/Plotly which was deployed to Heroku.

Skills

Programming/Scripting: Python, C/C++, SQL, Excel, MATLAB, LabVIEW, IHDL

Packages: NumPy, SciPy, Pandas, Matplotlib, Scikit-Learn, Natural Language Toolkit, TensorFlow, skimage.

Experienced in: Data scraping and wrangling, dashboards, machine learning models for classification, regression, clustering, outlier detection and forecasting. Natural language processing (NLP), Convolutional Neural Networks (CNNs), embeddings, sentiment analysis, hypothesis testing, A/B testing.

Professional Experience

PhD Candidate, Physics & Astronomy. | Rutgers University, New Jersey, USA | (2015-present)

- Designed and performed state-of-the-art experiments to explore electronic properties of twisted two-dimensional materials using Scanning Tunneling Microscopy.
- Analyzed multidimensional experimental data using Python to extract weak signals from noisy data.
- Experienced in breaking down complex ideas and presenting them to experts and non-experts.
- Extensive writing experience which led to four high-impact publications in peer-reviewed journals.

Data Science Certificates

Erdos Institute Data Science Bootcamp (May-July 2020, 1st place winning final project.)

Coursera: Applied Data Science with Python Specialization (four separate courses) (Jan-Jun 2020).

Education

PhD in Physics & Astronomy, Rutgers University, NJ, USA. | GPA: 3.9/4.0 | 2015-Nov 2022 (expected)
B. Tech. (Engineering Physics), Indian Institute of Technology, Guwahati, India. | GPA: 9.04/10 | 2010-2014