Amitesh A. Pandey

Education

Caltech **September 2022 – May 2026**

B.S. Computer Science & Data Science *Pasadena, California*

- **Coursework:** Data Structures, Algorithms, Theory of Computation, Programming Systems, Discrete Mathematics, Multivariable Calculus, Linear Algebra, Real Analysis, Complex Analysis, Object Oriented Design

Stanford University **September 2020 – March 2022**

Dual Enrollment in Mathematics *Remote*

- **Coursework:** Ordinary and Partial Differential Equations, Multivariable Differential Calculus, Multivariable Integral Calculus, Game Theory and Strategic Thinking

Experience

MIT PathCheck Foundation **November 2020 – May 2022**

Researcher *Remote*

- Developed a python web-scraping bot using the Selenium library to automate much of the data collection from local media outlets for countries with scarce data like Nepal, South Korea, India.
- Compiled the 3 page (and 100+ references) reference list using the BibTex library for the citations section of the study.
- Used Pandas and MatPlotlib in Python to visualise trends in COVID control data for different regions. Used NumPy to conduct significance tests for causal relationships between economic determinants and COVID spread.

ShiokarAI, Inc **May 2020 – May 2022**

Software Developer *New Delhi, India*

- Assisted in development of the front end of the web application for using Figma and JavaScript.
- Worked with NLTK, Pandas libraries in Python to train an NLP model for detection of sentiments in news headlines.
- Collaborated with team members using version control systems such as Git to organize modifications and assign tasks.

Institute of Mathematics, Bulgarian Academy of Sciences **June 2021 – August 2021**

Summer Research Fellow *Sofia, Bulgaria*

- Conducted a literature review of research on the structure of heuristic and greedy algorithms used to solve the bin packing problem.
- Studied integer linear programming methods to derive a linear equation with real valued constraints to represent the 2D Bin-packing problem's mathematical formulation
- Utilized the NumPy and Random libraries in Python to build the crossover and evolution methods for the Genetic Algorithm. Compared the efficiency of this method with a Binary Tree based packing approach.

Projects

Vesper Vision | *OpenCV, NumPy, imutils* **January 2022**

- Developed an automatic bot using Python and RaspberryPi Console to detect eye movements and sleep.
- Developed a linear SVM and Histogram of Oriented Gradients approach eye-aspect-ratio prediction.
- Implemented a mean-shift algorithm and a non-maximum suppression model to solve the overlapping boundary box problem using 2011 ICCV: *Ensemble of Exemplar-SVMs for Object Detection and Beyond*

Zetamac Solver | *Webdriver, Python* **November 2021**

- Created a web-script using selenium to solve the arithmetic game: arithmetic.zetamac.com.
- Used the time module to avoid server rate-limiting. Achieved a score of 145.
- In the process of building a similar game with normalisation of arithmetic questions using crowd sourced data.

LSTM vs ARIMA | *Tensorflow, Statsmodels, Matplotlib, Pandas, csv* **October 2021**

- Used YFinance API to obtain .csv financial data for stocks depending on ticker queries (stored using MongoDB)
- Implemented time-series forecasting on SBI's stock price using Autoregressive integrated moving average (ARIMA) and Long-Short Term Memory (LSTM) RNN.

Awards and Technical Skills

Languages: Python, Java, C++, HTML/CSS, JavaScript, SQL, LaTeX
Technologies/Frameworks: Apollo, Django, Websockets, Git, WordPress, MongoDB, MySQL
Awards: Euclid Mathematics Contest Top 5%, Indian National Mathematics Olympiad Qualifier, All India Rank 12 AISSE