JITESH PABLA

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EDUCATION

Master of Science - Computer Science **Expected May 2021**
Arizona State University, Tempe, AZ GPA: 3.93/4.0
Courses: Data Mining, NLP Methods for Biomedical Text Mining, Statistical Machine Learning, Introduction to Artificial Intelligence, Data Visualization, Distributed Database Systems, Foundations of Algorithms, Mobile computing, Data-Intensive Systems for Machine Learning, Perception in Robotics, Introduction to Human-Computer Interaction

Bachelor of Technology (with honors) - Computer Science and Engineering **May 2019**
Jaypee Institute of Information Technology (JIIT), Noida, India CGPA: 8.1/10
Courses: Data and web mining, Introduction to Deep Learning, Artificial Intelligence, Statistics, Quantitative Methods for Social Sciences, Data structures, Algorithms, and Problem Solving

TECHNICAL SKILLS

Languages: Python, C/C++, SQL/PostgreSQL, Lua, JavaScript, Java, PHP
Misc: Tools: Git, GitHub, Jupyter Notebook, Anaconda, Android Studio, Axure RP, Adobe XD, LaTeX; OS: Linux, Windows;
Hardware: Arduino, Raspberry Pi; Web: HTML, CSS, Bootstrap, jQuery, Vue.js, D3.js, Flask, Drupal;
Machine Learning: NumPy, Pandas, Scikit-learn, Matplotlib, Keras, PyTorch, TensorFlow, OpenCV, NLTK
Certifications: Deep learning specialization - deeplearning.ai (Coursera)

WORK EXPERIENCE

Web Developer, Arizona State University, USA **November 2020 – Present**
- Currently maintaining and editing the websites for different schools within ASU's official domain via Drupal, HTML, CSS, and PHP.
- Migrating the websites from Drupal 7 to Drupal 9 with migration tools, and applying the latest ASU web standards and design.
- Designed and built a new news website - crimeandjusticenews.asu.edu using Adobe XD and Drupal.

Graduate Service Assistant, Arizona State University, USA **January – May 2020**
- Classified 50k COVID-19 articles related to vaccines and therapeutics by scraping Google search results to obtain noisy data and training a scientific-text based Bidirectional Encoder Representations from Transformers (BERT) model called SciBERT.
- Ranked COVID-19 articles for queries relevant to vaccines and therapeutics by utilizing BERT as an embedding generator and finding each article's Cosine similarity with keywords related to vaccines etc., and also by implementing a BM25 + RM3 approach.
- Identified Randomized Controlled Trials (RCTs) from over 50k PubMed articles by modifying the BERT architecture and manipulating its inputs along with various NLP techniques using PyTorch and transformers.
- Implemented a visualization to understand the attention architecture in BERT and the effects of modifications made to it and its inputs.

Participant, LuaRocks -The Lua package manager, Google Summer of Code 2018 **June – August 2018**
- Refactored the core functionalities of LuaRocks commands for - listing, uninstalling, and showing details of packages, searching and installing rocks from the web, opening documentation, linting the rockspec, selecting a rock-tree, etc., to modularize them.
- Programmed a complete Application Programming Interface (API) to provide access to the LuaRocks functionality using Object-Oriented design patterns and used Git extensively for contributing to the main code-base.
- Designed a responsive and interactive web-based GUI using HTML, CSS, Bulma, and Vue.js to give access to the LuaRocks functionality. Interfaced the GUI with the LuaRocks-API in the backend using CGILua.

Intern, Python development, Internity Foundation and Rannlab Technologies Pvt. Ltd., India **June – August 2017**
- Applied machine learning models like - K Nearest Neighbours (KNN), Support vector machines (SVMs), logistic regression, etc. for classification on various datasets utilizing NumPy, Pandas, and Scikit-learn.
- Built a proof-of-concept chatbot based on Stanford's CS20 chatbot by implementing a seq2seq model using TensorFlow, trained on Cornell's movie dialogue corpus.

Intern, Data analysis, Team Computers Pvt. Ltd., India **June – July 2017**
- Applied data preprocessing techniques, statistical and machine learning methods such as moving averages, linear regression, spectral clustering, etc. on dummy datasets using "Alteryx" (a data science tool).
- Predicted prospective car customers using car sales and inquiry data (with millions of data points spanning across 1 year) using time series analysis as an individual project.

PUBLICATIONS

- Parmar, M., Ambalavanan, A. K., Guan, H., Banerjee, R., Pabla, J., & Devarakonda, M. (2021). COVID-19: Comparative Analysis of Methods for Identifying Articles Related to Therapeutics and Vaccines without Using Labeled Data. arXiv preprint arXiv:2101.02017.
- Pabla, J., Sharma, V., & Krishnamurthi, R. (2019, March). Developing a Secure Soldier Monitoring System using Internet of Things

and Blockchain. In 2019 International Conference on Signal Processing and Communication (ICSC) (pp. 22-31). IEEE.

PROJECTS

Lazy Text Predict **September 2020 – Present**

- Programmed the first prototype of lazy-text-predict, an open-source library for easily training and evaluating multiple deep learning based text classification methods.
- Currently developing the Continuous integration and testing pipeline for future development.

Data Driven Disaster Response **August – December 2020**

- Designed an interactive D3.js based dashboard for visualizing the social media data of a city to aid the disaster response during a natural disaster.
- Categorized the social media messages into resource categories using statistical metrics and Latent Dirichlet Allocation (LDA) and applied rule-based sentiment analysis using NLTK.
- Developed a set of interconnected visualizations including - line-charts, pie-charts, heat-maps, etc. to view the frequency of a resource need or a particular emotion in any part of the city during any time.

Meal Detection using CGM data **August – December 2020**

- Trained a Random Forest model on Continuous Glucose Monitoring (CGM) time-series sensor data to automatically classify when a diabetic patient eats a meal, achieving an accuracy of 94%.
- Preprocessed the data and extracted meaningful temporal and frequency-based features from the CGM time-series data.
- Applied K-means and DBSCAN algorithms to bin the CGM data into clusters for further analysis by doctors.

Clinical Semantic Textual Similarity (STS) **August – December 2019**

- Preprocessed the clinical text to remove stop words, punctuation, etc., and utilized various word2vec pre-trained models to extract token embeddings in order to create a single vector representation for each sentence.
- Fine-tuned multiple BERT models on the given STS dataset and extracted vector representation for each sentence.
- Engineered several similarity features based on the extracted sentence vectors and applied gradient boosting regression to achieve a Pearson correlation greater than 0.84 between the ground truth and the model's predictions.

Tweet Sentiment extraction (Kaggle competition) **May – June 2020**

- Fine-tuned several BERT models and other NLP transformers like XLNet, RoBERTa in a question-answer format to extract the substring of a given tweet which represents the given emotion of the tweet.
- Achieved a Jaccard similarity score of 0.687, better than around 600 other submissions.
- Programmed in Python and utilized PyTorch, transformers, Pandas, and Jupyter notebooks.

Redesign of venezias.com **January – May 2020**

- Analyzed the multiple design flaws in the User interface (UI) and the overall functionality of the venezias.com website. using heuristic evaluation and cognitive walkthrough.
- Redesigned several elements of the homepage, menu page, and the coupons page to make the UI reliable and easier for the user to navigate.
- Utilized the Axure RP tool to create the prototype.

Clinical Semantic Textual Similarity (STS) **August – December 2019**

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Text-to-face generation **August 2018 – May 2019**

- Investigated and summarized various methods for facial image generation using a text description of a face.
- Collected a dataset of text descriptions of hundreds of images from the Labelled Faces in the Wild (LFW) dataset and utilized word2vec to create text embeddings.
- Programmed a Keras implementation of StackGAN (a variation of Generative Adversarial Networks) and trained it to generate facial images using the collected dataset.

Crop yield prediction based on temperature and rainfall for India **September – November 2018**

- Predicted the temperature and rainfall for a set of Indian districts using Recurrent Neural Network (RNN) and its variation Long short-term memory (LSTM) and selected the method with the least mean absolute error.
- Utilized the rainfall and temperature prediction to further predict the yield of various crops in Indian districts using different methods - Linear regression, Random Forests, K- nearest neighbors (KNN), and a Feed-Forward Network; performed a comparative analysis for all the methods with Random Forests giving the least error.
- Used Pandas, NumPy, Scikit-learn, Keras, and Matplotlib on Jupyter notebook for implementation.

Developing a Secure Soldier Monitoring System using Internet of Things and Blockchain **January – May 2018**

- Built a compact health and location monitoring system for soldiers on a battlefield using Raspberry Pi, Arduino and sensors to capture body temperature, heart rate, and GPS coordinates, along with a panic button and LCD to display messages.
- Re-engineered a blockchain prototype in Python to store AES encrypted data being transmitted from the monitoring system via GSM in an immutable and trustworthy fashion.

Anomaly detection on Intel lab data **September – November 2017**

- Applied simple moving average (SMA), Density-based spatial clustering of applications with noise (DBSCAN) and LSTM to detect anomalous readings from various sensors in the dataset.
- Used Pandas, NumPy, Scikit-learn, Keras, and Matplotlib for implementation.

ACTIVITIES

Member, Melrose Toastmasters, Phoenix, USA **June 2020 – present**

- Practising public speaking by giving prepared and extemporaneous speeches, and evaluating other people's speeches.

Vice President, GRADient, ASU, USA **May 2020 – present**

- Organizing online social events for LGBTQ+ graduate students and allies to foster inter-department communication and collaboration.

Student mentor, 'Algorithms and Problem Solving lab' and 'Artificial intelligence lab' at JIIT, Noida, India **July 2018 – May 2019**

- Assisted professors with setting assignments, proctoring exams, and solving student doubts for a class of sixty students.

Workshop teacher, Computational Methods for Medical Image Analysis, India **April 2019**

- Taught Image segmentation using Python to faculty and graduate students.

Student Coordinator, Open Source Developers Club at JIIT, Noida, India **July 2017 – May 2018**

- Coordinated, organized, and taught at various workshops, meetups, and hackathons with hundreds of participants.

Student Coordinator, Graficas - Graphics and animation Club at JIIT, Noida, India **July 2017 – May 2018**

- Coordinated, organized, and taught at various workshops and competitions.

Director of digital and technical department, Jaypee Model United Nations at JIIT, Noida, India **September 2017 – January 2018**

- Managed and led a team of eight students to create the website, social media posts, physical posters, banners, and booklets for the JMUN 2018 event - attended by over five hundred participants.

Student Volunteer, IEEE student chapter at JIIT, Noida, India **July 2016 – May 2017**

- Taught the basics of C++ and web development to students across multiple workshops.

Hackathon 2nd place, Build-a-thon by Hackerearth.com **November 2016**

- Build an Android application for women's safety, with multiple ways to record and alert about any dangerous situation.

Intern - Marketing and Recruitment, Umeed - a drop of Hope (NGO), Delhi, India **December 2015 - January 2016**

- Marketed about the Umeed NGO to people ranging from school students to senior citizens.
- Assisted more than 20 people to register as a volunteer for the NGO.
- Went to very low-income regions to help and support young children with their studies.