JITESH PABLA

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EDUCATION

Master of Science - Computer Science **August 2019 – May 2021**
Arizona State University, Tempe, AZ GPA: 3.91/4.0
Courses: Data Mining, Natural Language Processing, 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 **July 2015 – 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

TECHNICAL SKILLS

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

WORK EXPERIENCE

Web Developer, Arizona State University, USA **November 2020 – May 2021**
- Maintained and Edited the websites for different schools within ASU's official domain via Drupal, HTML, CSS, and PHP.
- Migrated the data of over 28 websites from Drupal 7 to Drupal 9 with migration tools by creating Extract Transform Load (ETL) pipelines and utilizing SQL to understand and manipulate the large database.
- Designed and built a news website - crimeandjusticenews.asu.edu by applying the latest ASU web standards and front-end design.
- Managed the team's kanban board to deliver results on time and increase work efficiency by as much as 10 percent.

Graduate Service Assistant (Research), Arizona State University and Mayo Clinic, USA **January 2020 – 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 and therapeutics.
- Identified Randomized Controlled Trials (RCTs) from over 50k highly imbalanced 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 BERT's attention architecture and the effects of modifications made on its inputs.

Software Engineer, Google Summer of Code 2018 Participant with LuaRocks **June 2018 – 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.

Python Developer Intern, Internity Foundation and Rannlab Technologies Pvt. Ltd., India **June 2017– August 2017**
- Applied machine learning models like - K Nearest Neighbours (KNN), Support vector machines (SVMs), logistic regression, etc. for classification on various datasets from Rannlab Technologies's clients by utilizing NumPy, Pandas, and Scikit-learn.
- Spearheaded the creation of a chatbot by implementing a seq2seq model using TensorFlow to showcase it to potential company clients.

Data Scientist Intern, Team Computers Pvt. Ltd., India **June 2017 – July 2017**

- Applied data preprocessing techniques, machine learning, and statistical methods such as moving averages, linear regression, spectral clustering, etc., on dummy datasets using "Alteryx" (a data science analytics tool).
- Predicted prospective car customers using car sales and inquiry data (with millions of data points spanning across one year) using time series analysis to potentially boost sales for multiple car dealerships by up to 19 percent.

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 initial lazy-text-predict prototype, an open-source library for quickly training and evaluating multiple Deep Learning based text classification methods.
- Currently developing the Continuous integration and testing pipeline along with a docker container for future development.

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

- Led a team of six people by organizing meetings, delegating work, and tracking tasks via a kanban board to design an interactive D3.js based dashboard for visualizing a city's social media data to aid the disaster response during a natural disaster.
- Cleaned and 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 2020 – 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.

Tweet Sentiment extraction (Kaggle competition) **May 2020 – 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 2020 – 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 elements of the homepage, menu page, and the coupons page to make the UI reliable and easier to navigate.
- Utilized the Axure RP tool to create the prototype with a 30% increase in user navigation speed and accuracy.

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

- Preprocessed the clinical text to remove stop words, punctuation, etc., and utilized various word2vec pre-trained models to extract token embeddings 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, applied gradient boosting regression, and grid search to achieve a Pearson correlation greater than 0.84 between the ground truth and the model's predictions.

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 and annotated 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) with Convolutional Neural Networks (CNN) and successfully trained it to generate facial images using the collected dataset.

Crop yield prediction based on temperature and rainfall for India **September 2018 – 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 2018 – 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 transmitted from the monitoring system via GSM in an immutable and trustworthy fashion.

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

PyDetection and BliStick **August 2017 – December 2017**

- Built a Python library called "PyDetection" based on OpenCV to standardize and simplify the code written specifically for object detection and identifying humanoid figures.
- Created an android application called "Blistick" that uses PyDetection library for face and humanoid detection and recognition to aid individuals to interact with others.
- Implemented a Flask server to run the Haar Cascade classifier for the android application acting as a gesture-based front-end.

ACTIVITIES

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

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

Vice President, GRADient, ASU, USA **May 2020 – April 2021**

- 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', JIIT, 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, JIIT, India **September 2017 – January 2018**

- Successfully 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.
- Led the creation of a website for the event using the LAMP stack, which users used for over five months to register for the event and find useful information.

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.