Biraaj Rout

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EDUCATION

The University of Texas at Arlington — MS Computer Science, August 2022 – Present, GPA-3.83/4
Dr Ambedkar Institute of Technology, Bangalore — B.E Computer Science, CGPA-8.82/10, June 2018

COURSES

- Machine Learning, Neural Networks, Data Mining, Data Analysis and Modelling Technique, Data Structures and Algorithms, Database I.

TECHNICAL SKILLS

Languages: Python, HTML, CSS, Shell Script, JavaScript, C, C++, C#, Java.
Databases: MySQL, MongoDB, Redis
Frameworks/Libraries: PyTorch, Tensorflow, NumPy, Pandas, Matplotlib, Vue.js, Flask, PHP, GraphQL, Django, Bootstrap
Tools: AWS EC2, AWS Lambda, Elasticsearch, Kibana, Apache Airflow, Shaka Packager, Visual Studio, Git, Heroku
OS: Windows, Unix

CURRENT RESEARCH

Graduate Research Assistant (RA) at The Luber Lab(luberlab.org):

- Working on segmenting cell and identifying the active cells using deep learning model on videos of various cycles of embryogenesis.
- Working on spatial proteomics (CODEX) data to improve image segmentation of cells in the image using deep learning and then using those images for annotations.
- Handling multi-channel image in grayscale to have specific color for different proteins using structural similarity index measure to select one channel from similar proteins.

PROFESSIONAL EXPERIEINCE

Muvi Entertainment Pvt. Ltd, Bhubaneswar - *Software Engineer* MAY 2020 – JULY 2022

- Developed Muvi Live Server. In that, I implemented an end-end procedure that creates a new AWS EC2 instance having certain Nginx RTMP Configuration facilitating one-way live streaming. I also worked on optimizing the server launch time and tweaking the Nginx RTMP configuration to support DVR, HLS, RTSP and DASH streaming.
- Created the frontend framework for Muvi Live to facilitate livestreaming. Using Vue.js I worked on the server launch process and other features in the Muvi Live page.
- Researched two-way live streaming using WebRTC and developed a basic application using WebRTC with STUN/TURN servers following a mesh approach enabling 10 concurrent users to have direct video conference from the browser itself.
- After receiving a considerable amount of Audio and Video data from Muvi Live Server I analyzed data obtained from various Livestreams using Deep Learning python libraries. I also managed the data received in elastic search and curated a process to view it on Kibana dashboard.

Deepcompute Software Pvt Ltd, Bangalore - *Associate Software Engineer* AUGUST 2018 - AUGUST 2019

- Developed End-to-End Entity Extraction and Phrase Generation pipeline for competitive intelligence app and clinical trials application where I worked on integrating the machine learning model to extract entity and then feed it for phrase generation. Used python as the primary programming language and created a server cluster using Apache airflow for the data processing and extraction tasks.
- Made an API using Django to get search results from Bing search with various medical keywords and used the result to feed it to an automated crawler for extracting relevant medical and biological data in a team of two. I reduced the manual effort to crawl the relevant websites by almost 80%.

ACADEMIC PROJECTS Aug 2022 - Present

Airplanes, Motorbikes and Schooners image classification(link)

- Used VGG16, VGG19 deep learning model and few custom CNN to do the image classification.
- Code was written using python as main programming language and PyTorch as the primary framework using NumPy and Pandas.
- Prediction accuracy using VGG19 was 99% and using simple CNN was 97%.

Wild animal image classification(link)

- ResNet was the primary machine learning algorithm here which obtained an accuracy of 80%.
- Used NumPy, Pandas and Pytorch primarily for the code.

Naïve Bayes Text Classifier(link)

- Here Naïve Bayes was implemented using python and NumPy from scratch.
- Obtained a prediction accuracy of 30% using Laplace smoothing.

RESEARCH PAPER

COVID-19 Vaccination Twitter Data Analysis for India (International Journal of Research in Engineering and Science (IJRES), Vol 09, Issue 11, ISSN - 2320-9364, Page no 62-69.)

- Extracted Twitter data and analyzed public reaction on different vaccines released in India. Visualization such as word cloud and vaccine timelines are provided. This would help vaccine manufacture get a real-time response.

CERTIFICATIONS, WORKSHOPS, AND AWARDS

- **Muvi Power Performer (August 2021 & June 2022):** Award received for reducing the live streaming server launch time by 50% and completion of Vue.js integration for Muvi Live.
- **DAT210x: Programming with Python for Data Science** (Issued by edX and Microsoft in August 2016)**:** A three-month course consisting of basics of data science and ML algorithms with multiple projects. I completed this course with a score of 73%.
- **C-Debugging (ELECTROTECH-2K16, DR AIT)** (Issued by AIT in October 2016)**:** Secured First place in this programming competition.
- **Machine learning and data analytics: A New Frontier** (Issued by AIT in January 2018): This workshop trained me on machine learning implementations over medical data.
- **Artificial Intelligence Foundations: Machine Learning** (Issued by LinkedIn in November 2021)**:** This gave an insight into AI basics and its application different scenarios like e-commerce, health care and so on.
- **Machine Learning with Python: Foundations** (Issued by LinkedIn in November 2021)**:** This course trained me to use different ML algorithms by programming in python.
- **The Data Science of Healthcare, Medicine, and Public Health, with Barton Poulson** (Issued by LinkedIn in November2021): This course helped in understanding analytics aspect of Healthcare data.