Avishek Das

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With a keen interest in Artificial Intelligence and Deep Learning, looking forward to contribute to the development of innovative solutions in the IT industry. Committed to leveraging technology to improve efficiency and deliver exceptional results.

Professional Experience

- **Tata Consultancy Services** Kolkata, India
  System Engineer *Aug 2022 - Currently Working*
  Developer @ DTS (Digital Transformation Services)
  - Working on the development of an automatic sandbox for processing unorganized data and uploading to SQL server using Python.
    Developed the core part for formatting the unorganized data and convert it to organized and processable data frames using pandas. Applied different string manipulation techniques to improve the data quality.
    Optimized the sandbox core and was able to **reduce the processing time by one-sixth** which has removed the blockers at this stage for the client.
  - Worked on text analyzing and summarizing of financial reports using token **dependency mapping, Named Entity Recognition** and Natural Language Processing. Prepared word cloud to visualize the important words depending on frequency.
  - Worked on Natural Language Processing for HSE sector to predict upcoming incidents based on historical data. Performed topic modeling on free text data to identify different causes of incidents. Used sentence-transformer to obtain similarities between many incidents and predicted upcoming incidents. Developed front and back-end of web app using Flask framework to use those models and statistics coming out from the historical data to inform users beforehand about any predicted incident.

Education

- **Indian Institute of Engineering Science and Technology, Shibpur** Howrah, Westbengal
  Bachelor of Technology In Civil Engineering *; CGPA: 9.15/10.0* *2018 - 2022*
  Key Courses Taken: Engineering Mathematics, Uncertainty Quantification, Structural, and Geotechnical Engineering
- **Sonamukhi Bindu Basani Jubilee High School** Sonamukhi, Westbengal
  Class 12th (Higher Secondary); WBCHSE; Percentage: 89% *2017 - 2018*
- **Sonamukhi Bindu Basani Jubilee High School** Sonamukhi, Westbengal
  Class 10th (Secondary Examination); WBBSE; Percentage: 84.14% *2015 - 2016*

Projects

- **Emotion Classification from Images Using Deep Image Classification - Link to the repository.** June 2023
  Classification of images and prediction of emotions in the images using CNN-based model.
  - Prepossessed the images by converting the layers from BGR to RGB, resizing using TensorFlow and OpenCV.
  - Prepared the data using **Dataset API** of TensorFlow. Built a Sequential model having **100% training and testing accuracy**.
- **Keyword Extraction using TextRank Algorithm - Link to the repository.** June 2023
  Extraction of important keywords having very high contextual relation with the given text.
  - Applied TextRank algorithm to calculate the weights of each word in a given text after removing the stopwords and unwanted words based on the POS given.
- **Text Emotion Prediction Using Machine Learning - Link to the repository.** May 2023
  Prediction of emotions in textual data using machine learning and natural language processing.
  - Prepossessed textual data by tokenizing, removing stop word, removing numbers, expanding short contractions, and lemmatization. Also converted text to vector using **Tf-IDF** and **word embeddings**.
  - Created classification model using **DecisionTree, RandomForest algorithm** with 82% and 84.1% accuracy. Trained Embedding and **LSTM-based deep learning model** with a training accuracy of 92.9% and validation accuracy of 89.6%.
- **Automation in Structural Engineering** Jun 2022 - Ongoing
  Prediction of the structural behavior of residential concrete building in Indian conditions.
  - Developed a deep learning-based regression model inspired by wave-net to predict the response of buildings due to wind and gravity load.
  - Developed model to predict optimum structural section sizes for a given condition using the **KNN-Regression** technique with **99.5% success rate** of being the optimum section.

- **Scraping StackOverFlow using Python - Link to the repository.** Jan 2023
  Scraping question, answers and related tags from Stackoverflow.
  - Developed a class called Scrape in Python which can scrape questions, answers, and tags given some options and save them into one text file.
  - These data can be used in any NLP problem statement to build chatbots or similar problems.

Skills Summary

- **Programming Languages**: Python, Java
- **Frameworks/ Libraries**: tensorflow, nltk, spacy, scikit-learn, Gensim, BeautifulSoup4, numpy, pandas, pyspark, scipy, matplotlib, plotly, seaborn, flask
- **Tools**: Dataiku (Core Designer Certified), Advanced Microsoft Excel, Microsoft Word, PowerPoint

Internship

- **Indian Institute of Engineering Science and Technology, Shibpur** Howrah, Westbengal
  Summer Research Intern *May 2020 - July 2020*
  - Worked on vehicle detection and tracking using YOLO pre-trained model to extract traffic-related data and movement curve of traffic on some given road.

Positions of Responsibility

- **Manager In-Charge, BEing Civil** January 2020 - May 2022
  IIEST, Shibpur
  - BEing Civil is a website designed to simplify the lives of engineering students. It serves as a repository for various engineering-related materials. As part of my role in the organization, I manage the website, manage the team, and keep the website updated.
  - **Link to the website.**

Awards

- **National Award Competition (Civil) - INSDAG** 2021
  Institute for Steel Development & Growth
  - Designed "Iconic Steel Roof Structure over An Open-Air Theatre and Stage".
  - Part of a team of 4.
  - **Position Awarded**: **First place at the National Level.**
- **Bentley Future Infrastructure Star Challenge** 2021
  Bentley Systems
  - Innovative Idea Presentation - Energy extraction from the turbulence of wind due to high-speed vehicle
  - Part of a team of 2.
  - **Position Awarded**: **Selected in top 20 teams all over the world.**
- **Build O' Innovate (Smart Traffic)** 2021
  Indian Institute of Technology, Patna
  - Development of an automatic flow meter to measure traffic parameters using YOLO pre-trained models.
  - Part of a team of 3
  - **Position Awarded**: **Second place at the National Level.**

Courses/Certifications

- **Dataiku - Core Designer.**
- **Natural Language Processing with Python.**
- **Neural Networks and Deep Learning.**
- **Improving Deep Neural Networks: Hyper-parameter Tuning, Regularization and Optimization.**
- **Data Structures & Algorithms - Java.**