

NIHAR SANDA

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Education

Indian Institute of Information Technology, Dharwad

Aug 2019 - May 2023

Bachelor of Technology, Computer Science and Engineering

Karnataka, India

Experience

Robert Bosch Centre for Data Science and Artificial Intelligence, IIT, Madras **January 2023 - Present**

Research Intern

Dharwad, India

- Working under the guidance of Dr. Gokul S Krishnan in a mixture of RL and NLP related task.
- Facilitating the use of Reinforcement learning in a special type of unanswerable question generation task.

Indian Institute of Information Technology, Dharwad

October 2022 - January 2023

Undergraduate Research Assistant

Dharwad, India

- Worked under the guidance of Prof. Kavi Mahesh and Mr. Ahilash C B (PhD Candidate)
- Facilitated the use of transformer-based models in analysis of ontology-based associated rule mining.
- Finding semantic interestingness and interesting patterns analysis in various types of healthcare data for better representation of rules.

Camplus App, Varopro Private Limited

February 2021 - October 2022

Founder

Mumbai, India

- Headed the team in building the MVP which is being used and tested by more than 500 students currently.
- Startup is incubated by New Gen IEDC IIIT Allahabad, Government of India and also under Startup India.
- Developed the backend of the application using AWS Lambda, DynamoDB, S3, SES, API Gateway and MEN stack.

Google Summer of Code, PEcAn Project

June 2022 – November 2022

Student Intern

Mumbai, India

- Contributed to the creation of new R language's API for PEcAn packages of data assimilation and meta-analysis.
- Improved the authentication of the existing REST APIs by adding API Key and rate-limiting features.
- Collaborated with several scholars from across the world to comprehend the functionality and use of the PEcAn API

Indian Institute of Technology, Bombay

July 2022 – November 2022

Research Intern

Mumbai, India

- Worked on a novel idea in the field of education technology, named "Affect Aware tutoring system"
- Built a learning management system that collects the click-stream log data of the student, simultaneously captures video and then predicts the user's affect state for feedback
- Developed an optimized transformer-based deep learning model to predict the user's affect state. The model was trained on the huge DAiSEE dataset for approximately 300 hours.

Indian Institute of Information Technology, Dharwad

May 2022 - July 2022

Student Intern - Funded Project, Health and Family Welfare Services, Government of Karnataka

Dharwad, India

- Geo-Health Application: An interactive, multilingual application for the people of Karnataka to track nearby hospitals
- Common Health Architecture for Karnataka: Created a POC for the various health applications of GoK to map the data across various architectures.

Projects

Camplus App | *Flutter, AWS Lambda, S3, DynamoDB, API Gateway, Python*

February 2021

- Tracks the various systems on the campus such as the Mess System, Delivery System, Canteen, Gate Tracker etc.
- Developed various modules in the backend using the MVC architecture in MEN stack, AWS Lambda and API Gateway.
- Connecting the REST APIs with the Flutter UI and integrating secure authentication of the Application.

Covid-19 Mortality Prediction | *Data Visualization, Machine Learning, Deep Learning*

May 2022

- Pre-processing raw data from a private hospital in Karnataka with care while keeping essential features.
- Using SMOTE and undersampling techniques to address the issue of data imbalance.
- Implementation of different state-of-the-art machine learning models to predict the mortality of COVID-19 patients.
- Using the ML models to build an ensemble model and a thorough comparison and analysis of all the results inferred.

Protein Fold Recognition (On-going) | *NLP, Transformers, Bio-Informatics*

August 2022

- Enhanced Protein Fold Recognition for Low Similarity Datasets of protein sequences and its classes
- Feature Extraction of the data using PSSM and HMM profiles of the protein sequence and combining them with Sequence Graph Transform (SGT) and Bi-gram features.
- Implemented transformer based models like BERT to make the model more robust.

Technical Skills

Languages: Python, R, C, C++ HTML/CSS, JavaScript, SQL, Shell Scripting

Tools: Machine Learning, DL, NLP, EDA, MERN, Flask, Django, AWS, Flutter

Publications

Sqr: High Performance Secure Qr System to Filter Against Malicious Qr Codes Using Deep Learning Techniques

- Developed a high-performance system for detecting malicious and benign QR codes.
- Paper currently under review in Expert Systems with Applications Journal (SCI and SCOPUS Indexed).

Affect Aware Tutoring System using video Bots | *Data Visualization, Machine Learning, Deep Learning*

- Developed a novel idea of "Affect Aware Tutor System".
- Paper is documented and to be submitted in IEEE Transactions in Learning Technologies.

Interestingness from COVID-19 Data: Ontology and Transformer-Based Methods

- Identify interesting patterns using ontology-based mining techniques and process them with transformer models for identifying the interesting rules from the mined corpora.
- Paper is accepted for publication at ICON 2022, proceedings in ACL Anthology (Scopus indexed)

Ontology-Based Semantic Data Interestingness Using BERT Models

- An effective data preprocessing technique that introduces semantics at the level of data curation.
- Semantic Interestingness Framework (SIF) for COVID-19 Data.
- Enhanced apriori approach with constraints (ConstApriori algorithm), which employs interestingness measures for semantic facts extracted from RDF data.
- Implementation of Clinical BERT and Bio BERT model for identifying the most interesting rules using a cosine similarity measure - Semantic Interestingness.
- Paper is currently under review in Taylor and Francis' Connection Science Journal

Leadership / Extracurricular

- Lead a team to the Grand Finals at Smart India Hackathon 2022
- Top 6 globally at International Accelerator Program, Austin, Texas
- Founder and President of Velocity, Web and App Dev Club of IIIT Dharwad
- Senior Mentor of Data Science and Artificial Intelligence (DSAI) Society
- Web Lead at IEEE Bangalore Chapter and Postman Student Leader.