Anubhav **Sachan**

Department of Electronics and Communication Engineering · National Institute of Technology Silchar

(+91) 8090736674 | anubhav_ug@ece.nits.ac.in | anubhavsachan.com | anubhav4sachan | anubhav4sachan

Education

National Institute of Technology Silchar — *Silchar, Assam*

B. Tech. in Electronics and Communication Engineering — *August 2017 - June 2021 (Expected)*

Puranchandra Vidyaniketan — *Kanpur, Uttar Pradesh*

Intermediate Sciences (Physics, Chemistry, Mathematics) — *May 2014 - May 2016*

Experience

Saarthi.ai — *Bengaluru, India*

Research Intern, Speech and Language Technology Lab — *April 2020 - June 2020*

- Developed a *Model-based Offline Multi-Agent Dialogue Policy Learning* technique using deep reinforcement learning and incorporated Actor Critic framework to improve the performance of the dialogue manager for their conversational AI product.
- Implemented and focused on few-shot unsupervised dialogue generation to understand the interpretability of latent action space for insights in the improvement in representation learning methods.

Indian Institute of Technology Indore — *Indore, India*

Undergraduate Research Intern — *May 2019 - July 2019*

- Worked in Pattern Recognition and Image Analysis (PRIA) Laboratory, IIT Indore, under Dr. Vivek Kanhangad, Discipline of Electrical Engineering, IIT Indore.
- Developed a a pore feature-based *Fingerprint Recognition System* using the multitask residual learning-based convolutional neural network, referred to as PoreNet that learns distinctive feature representations from the pore patches.

Key Projects

Model-based Offline Multi-Agent Dialogue Policy Learning — *April 2020 - June 2020*

Reinforcement Learning, Dialogue Modelling — *Link to the project*

- The implemented learning paradigm relentlessly focuses on user agent to learn along with the system agent in a joint/shared fashion with the incorporation of the actor critic framework for the optimization of the model-based offline learned dialogue policy.

Few-shot Unsupervised Discrete Sentence Representation Learning based Dialogue Generation — *April 2020 - May 2020*

Natural Language Processing, ML Interpretability — *Link to the project*

- A discrete sentence representation learning method through a Variational Autoencoder is devised and implemented to enhance the performance of dialogue manager.
- The generated latent space provides the flexibility of integration with any existing encoder-decoder dialogue model, for an interpretable response generation in a few-shot fashion.

CredCheck: Debunking Fake News by Leveraging Speaker Credibility and BERT — *July 2019 - September 2019*

Under review at WI-AIT 2020, Australia — *Link to Project*

- Re-engineered Google's BERT embeddings on LIAR dataset for multi-class classification task of Fake news detection.
- Used multimodal data to leverage speaker's personal specifics and his/her credibility to rate the legitimacy of the statement.
- Used refocusing mechanisms to further refine the results to achieve state-of-the-art results.

A Hybrid Classification Approach using Topic Modeling and Graph Convolution Networks

August 2019 - October 2019

Published in ComPE 2020, India

Link to Project

- Constructed a structured heterogeneous text corpus graph to transform text classification problem into a node classification problem.
- Created semantic rich features by using Text GCN and topic modeling based approach-LDA which are then fed into a novel classification model.

Fingerprint Recognition System with Unsupervised Domain Adaptation

May 2019 - July 2019

Image Analysis and Pattern Recognition

Link to the project

- A customized deep learning based fingerprint recognition system has been developed using the multitask residual learning based convolutional neural network architecture to extract the fixed length feature representations from a high resolution pore latches.
- The concept of domain adaptation in the absence of labelled training data for a deep learning architecture (DeepResPore) was implemented by augmenting the given deep neural network with the proposed new gradient reversal layer.

Electronic Health Record (EHR) based Patient Case Similarity

March 2019

Problem statement by eZDI, inc.

Link to Project

Presented in Grand Finale of Smart India Hackathon organized by MHRD India

- Calculation of Patient Similarity based on Patient Demographic and Case Details extracted from XML annotations in Electronic Health Records (EHR).
- XSLT used for transforming and extracting annotated data into CSV.
- An ensemble model consisting of both Word Mover's Distance (WMD) and General Feature Extraction based on curated list of important sections weighted in the ratio 3:1.

Academic Achievements

2019	**Winner, Hackathon, NIT Conclave 2019 organized by Council of National Institutes of Technology, Science Education and Research (NITSER)**	*NIT Rourkela*
2019	**Finalist, Smart India Hackathon (Software Edition) organized by Ministry of Human Resource Development**	*NIT Warangal*
2020	**Innovation and Entrepreneurship Development Centre (IEDC) Grant Winner** for the project "Deep Reinforcement Learning (DRL) Based Liquid Lens Auto-Focus system"	*NIT Silchar*
2020	**Undergraduate Research Council (UGRC) Grant Winner** for the project "AssistiveMRI: A deep learning approach to Medical Image Processing"	*NIT Silchar*
2018	**Recipient of Prime Minister Scholarship Scheme with AIR 729**	*New Delhi*

Skills & Interests

Programming	Python 3.6 (PyTorch, Flask, PyPI) Data Structures and Algorithms using C++, C
Machine Learning	Natural Language Processing in Conversational AI, Pattern Recognition in Biometrics, Deep Learning, with PyTorch Framework.
Utilities	SQL, Git VCS, AWS, Bash, LaTeX, Jekyll,Web Development (HTML5, CSS3, JS), Adobe Photoshop
Interests	Reinforcement Learning, Neural Networks, Advanced Pattern Recognition, Sentiment Analysis, Data Analytics, Advanced Algorithms