# Prasanna Biswas

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## Education

**Master of Technology**
*Computer Science and Engineering* — *July 2018 – July 2020*
Indian Institute of Technology, Bombay — *CGPA:* ***8.43***

**Bachelor of Technology**
*Computer Science and Engineering* — *July 2014 – July 2018*
V.E.S Institute of Technology, Mumbai — *CGPA:* ***9.07***

## Areas of Interest

Machine Learning. Multi-Modal Sentiment and Emotion Analysis. Data Structures and Algorithms.

## Work Experience

**Research Assistant**
*Center for Indian Language Technology, IIT-Bombay* — *Aug'20 – Present*

- Working with IBM-AIHN network on studying the Effect of Sarcasm in Emotion Analysis using a **Multi-Modal Meta-Learning** framework.
- Leveraging the audio modality using features extracted from **self-supervised learning-PASE**, **unsupervised learning-wav2vec**, along with traditional feature extraction like MFCC and Spectrogram to better capture the speech information.

## Publication

**Home Automation Using Panoramic Image Using IoT**
*Nupur Giri, Chetan Gupta, Mohit Choithwani, Prasanna Biswas, Piyush Gidwani*

- Published in 2018 International Conference on Recent Innovations in Electrical, Electronics Communication Engineering (ICRIEECE).

## Master Thesis

**A Computational Model to Understand Emotions in Sarcasm** — *M.Tech Project*
*Prof. Pushpak Bhattacharyya* — *Jan 2020 – July 2020*

- **Objective**: Emotion Recognition in Sarcastic sentences.
- **Dataset Contribution:** We created a benchmark dataset 'emo-UStARD', of sarcastic and non-sarcastic videos, that is annotated with 8 primary emotions, and also arousal and valence levels to get the intensity of emotions.
- Conducted a series of experiments exploring every aspect of textual modality using Encoder based classifier with BERT word embeddings.
- Observed **18% increase in accuracy score** in Multi-label Emotion Prediction when additional information like sentence being Sarcastic and Context is passed.
- **Submitted this work in EMNLP'2020.**

**Investigating importance of Emojis in Sarcasm Detection** — *M.Tech Project*
*Prof. Pushpak Bhattacharyya* — *June 2019 – Dec 2019*

- **Objective**: To analyze the importance of Emoji modality in Sarcasm detection from text.
- Implemented a basic **LSTM-NN** classifier and a **fasttext** classifier as a baseline for sarcasm detection problem which had text with emojis.

- Conducted **experiments** on these classifiers by placing **emojis** at **different positions** in the text for analysing the positional importance of emojis.
- Incorporated the features from **knowledge graphs** i.e. **SentiWordnet** and **EmojiNet**.The accuracy for the tweets increased and the values were close to 90%. The importance of emojis was then supported by LIME analysis.

## Course Projects

**Insincere Question detection in Quora** *Prof. Sunita Sarawagi Gupta, Spring 2019*

- Implemented various methods of encoding using **RNNs, CNNs with pooling and self-attention**.
- Used and tested state-of-the-art **BERT and ELMo** to obtain question representations.Best model was obtained using RNNs with self-attention layer and ELMo features, with an F-score of **0.60**.

**Neural Network based classifier from Scratch** *Prof. Preethi Jyothi, Autumn 2018*

- Implemented a **Neural Network model** where the number of **hidden layers**, number of **hidden nodes** and **activation function** of each layer can be **customized**. Conducted experiments using different combinations. Relu with 2 hidden layers performed the best.

**Movie Recommendation System** *Prof. Ganesh Ramakrishnan, Autumn 2018*

- Performed **collaborative based filtering** using user-preference, movie-feature and ratings matrices. Mean-centered the data and implemented **Linear Regression from scratch** to model the function between user preferences and movie features.

## Self Project

**Term Deposit Subscription Prediction**

- Analyzed the data using **Spark Dataframes**.Modelled this binary classification problem using Logistic regression available in MLlib of PySpark.

## Technical Skills

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| **Programming Languages** | C/C++, Python, Prolog, Java (Limited Exposure) |
| **Tools & Framework** | PyTorch, PySpark, Hadoop(Limited Exposure), Django, Wordnets. |
| **General Programming** | Git, LaTeX, HTML, CSS. |

## Extra-curricular

**Worked at Zilla Parishad School** *September 2017*

· Guided **needful students at Zilla Parishad School**, Dombivali for a week. Helping them in Drawing, Hand-crafts, Basic Mathematics and visualize concepts in Science.

## Position of Responsibility

**Social Secretary (Post-Graduate), CSE** *July 2019 – July 2020*

- **Coordinated** with **Institute and Department authorities** for Cultural related events. Worked with CSE Council in **organizing all department events** and designing t-shirt, hoodies, and posters.

**Teaching Assistant** *July 2018 – July 2020*

- Embedded Systems *(under Prof.Kavi Arya).*
- Computer Programming and Utilization Lab *(under Prof. Om Damani, Prof. Ganesh Ramakrishnan and Prof. Purushottam Kulkarni).*

## Achievements

- Secured $4^{th}$ position within the campus in **Flipkart GRiD** contest 2019.
- Won $2^{nd}$ prize in **Inter-College Project Competition 2018** at St.Francis Institute of Technology.
- Participated in **National-Level Project Competition** ELECTROWIZ - 2018.
- Participated in Group Dance competition of PG Cult 2019.