Swati Meena | **183070009**
Electrical Engineering | **M.Tech.**
Indian Institute of Technology Bombay | **Female**
DOB: 21/09/1994

Examination	University	Institute	Year	CPI / %
Post Graduation	IIT Bombay	IIT Bombay	2020	8.14
Undergraduate Specialization : ELECTRONICS AND COMMUNICATION				
Graduation	IIT(ISM) DHANBAD	IIT(ISM) Dhanbad	2017	6.93

RESEARCH EXPERIENCE

- **Image classification and localization using attention based multiple instance learning.**
  Guide: Prof. Amit Sethi, EE Dept., IIT Bombay *[May'19 - present]*
  - Designed a model for **classification** and **localization** of tumor in microscopic biopsy images of breast cancer, acheiving classification accuracy of **86.45%** on **100**× and **86.56%** on **200**× magnification on **BreakHis** dataset and extracted better visualisation without compromising accuracy.
  - **Submitted paper "Breast cancer histopathology image classification and localization using multiple instance learning." to 5th IEEE WIECON-ECE 2019 conference**.

MASTERS THESIS PROJECT AND SEMINAR

- **Classification and segmentation of Lymph nodes using deep learning.**
  Guide: Prof. Amit Sethi, EE Dept., IIT Bombay *[May'19 - present]*
  - Lymph node analysis of **breast cancer patients** in collaboration with **King's College London**.
  - Sucessfully discriminated the pathological features with **AUC scores** in the range of **0.79-0.82**
  - Submitted abstract for **"Digital pathology of axillary lymph nodes for early detection of cancer" in Molecular Analysis for Personalised Therapy Congress 2019, organised by Cancer Research UK, the European Society for Medical Oncology.**
  - **Future work** is aimed at externally validate the trained network on independent cohort of **CAMELYON 16** dataset and N stage prediction along with metastasis of cancer.
- **Design and architecture of convolutional neural network**
  Guide: Prof. Amit Sethi, EE Dept., IIT Bombay *[Aug'18-Nov'18]*
  - Studied about the designing principles and difficulties in training large scale deep neural networks such as initialisation strategy, batch normalisation, dropout and residual connection. Implemented different activation functions such as sigmoid and ReLU along with analysis of corresponding changes in the output layer.

ACADEMIC PROJECTS

- **Daily stock price prediction of NIFTY index and various campanies listed in NSE.** *[May'19]*
  - Achieved error rate as low as **0.64%** using support vector regression on data by processing past 10 years financial data from Yahoo Finance to extract technical indicator features such as RSI, MASI and EMA.
- **Classification of credit card frauds** *[Feb'19]*
  - Developed an **SVM model** for classification of fraudulent credit card transactions on dataset from **Kaggle** with accuracy of **92.5%**. Formulated an algorithm for convex quadratic optimization of dual form of SVM.
- **Automatic Pixel-wise Labeling** *[Apr'19]*
  - Developed a softmax classifier for classification of pixels of hyperspectral remote sensing images on **Indian Pines** dataset with **16** classes and trained a classifier with maximum likelihood, achieved accuracy of **83.5 %**.
- **Pothole detection and avoidance system** *[Nov'18]*
  - Implemented semantic segmentation network to recognize pothole to avoid road accidents.Trained the network with 240 images. Achieved classification accuracy of **62.5%** .
- **GUI based image editor** *[Aug'18]*
  - Designed an image processing tool with functionalities load, save, undo, reset, quit and operations including blur, sharpen, histogram-equalization, gamma correction, log-transform.

POSITIONS OF RESPONSIBILITY

- **Teaching Assistant, Electrical Department, IIT Bombay** *[Jul'18 - present]*
  - **Communication lab:** Assisted instructor in conducting lab sessions and exams.
  - **Introduction to Electrical Engineering Practice Lab:** Assisted instructor in conducting lab sessions.
- **Co-Founder, Samitra NGO** *[Sept'16 - Mar'17]*
  - Executed cleanliness and cloth donation drives distributing around 1500+ clothes in and around Dhanbad.

TECHNICAL SKILLS

- **Research Interest:** Machine Learning, Image Processing and Computer Vision.
- **Programming Languages:** C, C++, Python. • **Other Tools/Libraries:** Linux, Matlab, Pytorch, LaTeX.

EXTRA CURRICULAR ACTIVITIES & SCHOLASTIC ACHIEVEMENTS

- Secured **AA** grade in M.Tech seminar. *[Dec'18]*
- Secured **3rd** place in **Theatrix** event held during **Alcheringa 2017**, IIT Guwahati. *[Feb'17]*