Soham Saha

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Interests

- **Deep Learning, Computer Vision, Machine Learning**

Education

- **International Institute of Information Technology** — Hyderabad, India
  MS by Research in Computer Science and Engineering; ***GPA: 9.00/10*** — *Aug 2015 - Feb 2018*
  - **Advisor**: Prof C.V. Jawahar [Center for Visual Information Technology (CVIT)] and Dr. Girish Varma [Machine Learning Lab (MLL)]
- **Kalyani Government Engineering College, WBUT** — Kalyani, India
  Bachelor of Technology in Computer Science and Engineering; ***GPA: 8.82/10.0*** — *Aug. 2011 – July. 2015*
- **St.Xavier's Collegiate School** — Kolkata, India
  Indian School certificate Examination; ***94%*** — *2011*
- **St.Xavier's Collegiate School** — Kolkata, India
  Indian Certificate of Secondary Education ; ***96%*** — *2009*

Publications

- **Improved Visual Relocalization by Discovering Anchor Points** — **BMVC 2018, Newcastle, UK**
  Soham Saha, Girish Varma, C.V.Jawahar — *Spotlight Oral Presentation*
- **Class2Str: End to End Latent Hierarchy Learning** — **ICPR 2018, Beijing, China**
  Soham Saha, Girish Varma*, C.V.Jawahar*
- **Adversary is the best teacher:Towards extremely Compact Neural Networks** — **AAAI 2018, USA**
  Ameya Prabhu, Harish Krishna, Soham Saha — *Student Paper*
- **Compressing Deep Neural Networks for Recognizing Places** — **ACPR 2017, Nanjing, China**
  Soham Saha, Girish Varma, C.V.Jawahar — *Spotlight Oral Presentation*

Experience

- **Flipkart Internet Private Limited** — Bangalore, India
  Data Scientist — *April 2018 - Present*
  - **Forecasting Sales for Products**: Designed models for forecasting sales across all products in Flipkart, which is an e-commerce giant in India. This involved working with historical time-series sales data of products.
  - **Identifying gender demographics from Mobile Cases and Covers**: This project involved identifying the gender for which a particular mobile cover is relevant and hence more likely to be meant for.
- **International Institute of Information Technology** — Hyderabad, India
  Research and Teaching Assistant — *Jan 2016 - Jan 2018*
  - **Research Assistant - Center for Visual Information Technology (CVIT)**: Under Prof.C.V.Jawahar (CVIT) and Dr.Girish Varma (MLL). My research was on learning efficient neural network architectures for Visual Place Recognition, Object Recognition and Visual Relocalization. Fewer Parameters and Improved performance were considered as measures for efficiency.
  - **Teaching Assistant - Statistical Methods in Artificial Intelligence**: This was a Graduate Level course covering basic to advanced Machine Learning concepts and algorithms. More than 150 students enrolled for the course. The course instructor was Prof.Bapi Raju Surampudi.

Academic Projects

- **Visual Relocalization for Autonomous Navigation**: In this work, we propose an anchor point classification based architecture for performing 6-DOF camera orientation and pose localization. Our training procedure and loss function are both novel. We achieve in learning the optimal anchor point from which calculating relative offsets, can minimize the error. Our work has potential applications in autonomous navigation.
- **End to End Learning of Latent Hierarchies in Classes**: The goal was to propose a novel classifier which replaces traditional classifiers, in deep neural networks. Our model uses a structured loss to discover latent hierarchy in image classes, recover the accuracy of the base model while using fewer parameters.
- **Compressing Deep Neural Networks for Recognizing Places**: We implement iterative trained pruning and quantization on the NetVLAD Architecture for the task of Visual Place Recognition. The iterations help the weights to adjust to the pruning. Our method achieves impressive compression ratios for this task while encountering negligible loss in performance.
- **An adversary is all you need: Towards Adversarial Network Compression**: This work involves using an adversarial loss on a smaller neural network to mimic the outputs of a larger neural networks. This student-teacher network setup helps the student to almost replicate the performance of the teacher while using significantly fewer parameters.
- **On Learning Low Rank Approximations of Neural Network Parameters**: The aim was to discover an efficient low rank approximation for the weights of a Deep Neural Network by making such approximations end-to-end trainable.
- **Popular Techniques in DNN Model Compression and Practical Aspects in Deep Learning**: Designed and conducted a Lab Sessions as a part of Summer School on Machine Learning: Deep Learning 2017 and Summer School on Deep Learning for CV,2016.
- **AuthorContext: Predicting Author Collaborations from Citation Networks**: The task was to predict future author collaborations by generating efficient author representations from Citation Networks using Word2Vec.(Course Project)
- **Designing a Wikipedia Search Engine from Scratch**: The task was to design a Search Engine from scratch on a Wikipedia dump of around 56 GB (English), such that the results of the query were retrieved in <1s.(Course Project)
- **Learning to predict Gender from Human Faces**: Predicting a person's Gender from the faces using feature extractors such as SIFT,CNN and classifiers such as SVM and NN.(Course Project)

Programming Skills

- **Languages**: Python, C
- **Technologies**: **Pytorch, Tensorflow, Keras**, Scikit-learn, Numpy, Gensim, Caffe, OpenCV, OpenGL

Relevant Coursework

- **International Institute of Information Technology**: Machine Learning, Statistical Methods in Artificial Intelligence, Optimization Methods, Information Retrieval and Extraction, Game Theory, Cognitive Science