Soumadeep Saha

soumadeep.saha97@gmail.com
soumadeep.saha_r@isical.ac.in

AF-17, C.P.W.D. Quarters,
Sector - I, Salt Lake,
Kolkata - 700064

West Bengal, India
+(91) 869 737 3806

October 25th, 2021

Education

2020 – **Junior Research Fellow at**
Indian Statistical Institute, Kolkata

My current research is focused on trying to arrive at a middle ground between **statistical AI** which has seen a plethora of success recently, with **symbolic AI** which offers key benefits like zero/one shot learning, incorporating domain expertise and leading to explainable systems.

2015–2020 **Integrated BS-MS from**
Indian Institute of Science Education and Research, Kolkata

I graduated with a major in **Physics** and a minor in **Mathematics**. The plethora of advanced Mathematics and Physics courses equipped me with the tools required to tackle today's challenges in the field of Deep Learning and gives me a deeper insight into its inner machinations. My master's dissertation dealt with the issue of **Adversarial Robustness in Deep Learning systems**. We found that there is a natural correspondence between the "over-fittin" problem and the lack of robustness. We demonstrated that some of the techniques we use to avoid over-fitting also yield better adversarial robustness and that model architecture should be informed keeping these considerations in mind.

GPA : 7.8/10; **GRE** : 330/340

2013–2015 **High School**
Bhavan's G.K. Vidyamandir, Kolkata

I was awarded the prestigious national level **N.T.S.E.** scholarship in class X in addition to scoring **91.2%**. I was also a recipient of the esteemed **K.V.P.Y. Fellowship.** I passed my senior secondary examinations with a **92%** score. I also trained for olympiads and competitive programming and was selected for INOI.

Skills

Deep Learning	I am intimately familiar with the state of the art vision and language models like **ResNets, BERT, RoBERTa, XLNet** and techniques like **adversarial training, fine-tuning, transfer learning** in addition to a solid grasp of the foundations.
Programming	I am familiar with both Tensorflow and Torch down to a very granular level, and have implemented complex models like ResNet and complex training loops from scratch.

Experience

2019–2020	**Worked on *Adversarially robust deep learning systems* under the supervision of Dr. Utpal Garain, CVPR, ISI Kolkata.** As part of my master's dissertation I explored the issue of **adversarial robustness** using several approaches like transfer learning, cryptography, and tried to construct a mathematical model for our understanding of adversarial examples. Developed key insights into training and deploying deep learning models, experience with tensorflow, ImageNet models, and language models.
Summer 2020	**Worked on *Deep Analysis of Pain Management* as a project student at CVPR, ISI Kolkata.** Collaborated with medical professionals in the field of radio diagnosis to formulate a problem statement and set up data gathering protocols to create a high quality data set for analysis of back pain from MRI images
Summer 2018, 2019	**Worked on *Pure SU(3) Lattice Gauge Simulations* under the supervision of Dr. Pushan Majumdar, IACS Kolkata.** I worked on parallelising simulation programs for lattice gauge theory problems using OpenMP, meant to run on cutting edge massively parallel super computers.

Hobbies and Interests

- **Robotics** - I have an active interest in robotics, be it writing image processing or SLAM algorithms or designing a robot that can climb stairs. I have also conducted introductory workshops on robotics and was the Secretary of the Robotics and Astronomy club.
- **Music** - Classically trained pianist and enjoy listening to and performing works by Chopin, Beethoven, etc

---