Abhijeet Awasthi

Contact Information

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Research Interests

Continual Learning, Lifelong Learning, Transfer Learning, Multi-task Learning

Education

Indian Institute of Technology Bombay, India **July 2017 - Present**
Degree: Ph.D. in Computer Science and Engineering *CPI:* 9.43/10
Advisor: Prof. Sunita Sarawagi

Indian Institute of Technology Kharagpur, India **July 2012 - May 2016**
Degree: B.Tech. in Electronics and Electrical Communication Engineering *CGPA:* 8.72/10
Advisor: Prof. Goutam Saha

Daisy Dales School, Indore, India **2011 - 2012**
Certificate: All India Senior School Certificate Examination *Percentage:* 90.4

New Digamber Public School, Indore, India **2009 - 2010**
Certificate: All India Secondary School Examination *CGPA:* 9.80/10

Experience

Samsung Research Institute, Noida **July 2016 - July 2017**
Position: Engineer, GPS and Sensors team

Wipro Technologies, Bengaluru **May 2015 - July 2015**
Position: Intern, Product Engineering Services divison

Current Research Projects

Seminar on Continual Machine Learning: Conducting a literature survey on existing methods to build machine learning models which can learn continuously over time across varying domains, as a part of Ph.D. Seminar course at IIT Bombay.

Lifelong Sentence Classification: Learning to classify sentences with growing set of sentence categories. Learning to discover and adopt new categories efficiently.

Tackling Catastrophic Forgetting in Neural Networks: Catastrophic forgetting in neural networks pose a major hurdle in the direction of continual learning. As a part of project in Foundations of Machine Learning course, I read several papers on this topic and implemented a few of them for experimentation and gaining new insights.

Past Research Projects

B.Tech. Project **July 2015 - May 2016**
Title: **Constructive learning algorithms to provide optimal neural network topology**.
Studied algorithms which grow a neural network as a part of training routine. Investigated the problem of over-fitting in Cascade Correlation neural networks, which begin with only input and output layers and learn the architecture as a part of training routine. Proposed a heuristic which led to convergence with lesser number of hidden units and better generalization over some toy datasets as compared to the original algorithm.

Coursework

- **Machine Learning**: Foundations of Machine Learning, Advanced Machine Learning
- **Mathematics**: Convex Optimization, Matrix Algebra, Probability and Stochastic Processes

- **Computer Science**: Design and Analysis of Algorithms, Discrete Structures, Data Structures and Object Representation, Database Management Systems, Advanced Operating System Design
- **Signal Processing**: Digital Image Processing, Digital Signal Processing

Programming Skills

- **Languages**: Python, C, C++
- **Libraries**: TensorFlow, NLTK, NumPy, Pandas
- **Tools**: LaTeX, MATLAB, Android Studio

Honors and Awards

- Pre-Placement Offer from Wipro Technologies in recognition of outstanding performance during summer internship in 2015.
- Placement offers from Samsung Research Institute Noida and Synopsys India Pvt. Ltd. during final year at IIT Kharagpur.
- Merit-Cum-Means (MCM) scholarship in all the semesters at IIT Kharagpur.
- All India Rank 691 in first attempt among approximately 0.50 million students in IIT-Joint Entrance Examination, 2012.
- All India Rank 1600 and Madhya Pradesh State Rank 85 in first attempt among approximately 1 million students in All India Engineering Entrance Examination, 2012.

Hobby Projects

Autonomous Robotics Spring 2014

Our robot qualified for the final round of Tremors, an autonomous robotics event during Kshitij (Annual Techno-management fest of IIT Kharagpur). Arena was a prototype of an earthquake situation where in victims were visible light sources and the floor consisted of several vibrating regions. We programmed an Atmega-32 micro-controller to use light dependent resistors for detecting victims and an accelerometer to detect and escape vibrating regions in the arena.