RAJAT AGARWAL

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EDUCATION

Birla Institute of Technology & Science, Pilani – Goa Campus **Aug 2013 – Present**
- **Majors**: B.E. (Hons.) Computer Science and M.Sc. (Hons.) Chemistry **CS Major GPA:** 8.7/10.0

EXPERIENCE

Amazon | Bangalore, India **Software Development Engineer, Intern** **July 2017 - Dec 2017**

Infibeam.com | Ahmedabad, India **Summer Intern** **May 2015 - Jul 2015**
- Explored possibilities and gave recommendations on having a custom shell for a Java web-app written in Struts. Worked with Docker and ELK Stack.

Tesseract Imaging | Mumbai, India **Software Developer (Contributor)** **Oct 2014 - Jan 2015**
- Developed a web based viewer to render stitched images and videos in 360 at this startup from MIT Media Lab.
- Enabled navigation controls through gyro sensor and mouse panning by integrating it with webGL.
- Created 360 degree walk-through of places by linking images using ray tracing.
- Made a working prototype for 360 video viewing, 4 months before YouTube launched it.

PROJECTS

Deep Learning in TensorFlow **May 2016 – Present**

1. Zero Shot Classification
   - Implemented zero shot classification for two classes of CIFAR-10 dataset by training only on the remaining 8 classes.
   - Used shared representation for words and images by mapping images to their word vectors using a CNN as in *Socher et al. (2013)*
2. American Sign Language Recognition:
   - Trained a CNN for localization and detection of 24 alphabets in American Sign Language in a camera input.
   - Accuracy of 99% on localization and 98% on top-5 classification on test data - the highest among 15 teams in machine learning class of Fall 2016.
3. Implemented *Deep Convolutional Generative Adversarial Networks (DCGAN)* to generate handwritten digits by training the discriminator on MNIST.
4. Implemented *A Neural Algorithm for Artistic Style (2015)* for style transfer from a style image to a target content image.
5. Generated adversarial examples for a MNIST classifier using fast gradient sign method as in *Explaining and Harnessing Adversarial Examples (2015)*.
6. Trained a deep reinforcement learning agent to solve CartPole on OpenAI Gym.
7. Implemented standard papers for classification tasks on Google Street View House Numbers, MNIST and CIFAR-10 datasets.

Applied Parallel Computing - Siemens Corporate Research **Aug 2016 - Dec 2016**
- Performed hotspot analysis to identify performance bottlenecks in the given sequential software.
- Improved performance by converting the sequential bottlenecks to parallel while maintaining synchronization using OpenMP.

AutolabJS: Assignment Autograder and Testing Framework **Jan 2016 - Aug 2016**
- Enables instructors to offer real time autograded programming assignments while providing a standard test writing framework in Java.
- Evaluates the submissions in a distributed environment with load balancing and has a micro service for each application component.
- Implemented in Node.js, Socket.io, Bash, Java and deployed using Docker. Also open-sourced the project on GitHub.
- Deployed for OOP course with 170+ students in Fall 2016 and for multiple courses in future semesters.

Investigating the ”wisdom of crowds” at scale **Nov 2015**
- Collaborated with Dr. Sharad Goel from Stanford University to design tasks to investigate the Wisdom of Crowd effect using crowdsourcing.
- Poster published in *28th Annual ACM Symposium on User Interface Software and Technology, 2015.*

Connect4 AI **Jun 2015 - Jul 2015**
- Developed a bot to play Connect4 against a user. Implemented in Java using Minimax tree.

SKILLS

Interests	Software Development, Machine Learning, Neural Networks, Computer Vision, NLP, Reinforcement Learning, Parallel Computing
Tools & Languages	C, Python, Java, Shell, PHP, JavaScript, MySQL, Assembly, CUDA, Flask, Node.js, Socket.io, OpenCV, TensorFlow, Keras, scikit-learn, Numpy, Docker, Git, Verilog

ADDITIONAL POSITIONS

Teaching Assistant - Machine Learning (BITS F464), Neural Networks and Fuzzy Logic (BITS F312) **Jan 2017 - May 2017**
- Taught theory and designed the structure for Applied Machine Learning and Deep Learning portions of the two courses.
- Conducted lab sessions and office hours for 53 and 65 students respectively.
- Mentored students during the final project on sequence prediction for the Google SVHN dataset and binary semantic segmentation tasks using CNNs.
- Graded mid-term assignments, final projects and viva-voce performance.

Professional Assistant - Computer Programming (CS F111) **Jan 2015 - May 2015**
- Mentored and graded 30 students on C and Bash programming during the lab sessions.