Abhishek Bhatia

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EDUCATION

Columbia University: Master of Science in Computer Science — *New York, NY, USA*, *Jan 2017 – May 2018*

- GPA: 4.0/4.0
- Past Courses: *Machine Learning (A), Deep Learning (A), Cloud Computing and Big data (A).*
- Current Courses*: Natural Language Processing, Analysis of Algorithms, Bayesian Machine Learning, Reinforcement Learning.*

University School of Information, Communication and Technology: Bachelor of Technology in Information Technology — *New Delhi, India*, *Aug 2011 – June 2015*

- CPI: 75.35/100. (First class with distinction)
- Thesis: A Hybrid Autonomic Computing-Based Approach to Distributed Constraint Satisfaction Problems. [Link]

RESEARCH PROJECTS

De(warp/nois)ing Images with Conditional GANs: *advised by Dr. Sambit Sahu*

- Used a baseline cGAN for dewarping/denoising images, and understanding why the network blurs out high spatial frequency components.
- The same architecture was used to perform image completion as well.[Report-Link][Presentation-Link]

VideoStyle Transfer System: *advised by Prof. Peter Belhumeur*

- The system was designed for users to convert their video to a special style they like. Users can upload a video to the server, and get an email of the link of their processed videos.
- A video stylizing processing method is implemented using CNNs. EC2, SQS, SNS, and S3 were used to make the system efficient and scalable. [Report-Link][Presentation-Link]

RESEARCH EXPERIENCE

Columbia University: *Research Intern under Jaan Altosaar (Prof. David Blei)* — *New York, NY, USA*, *May 2017-Present*

- Project involved testing out TRPO and PPO policy gradient algorithms with different proximity metrics to develop more robust optimization methods. To be submitted later for publication in ICLR 2018.

Indian Institute of Technology(IIT), Delhi: *Project Assistant under Dr. Jayadeva* — *Delhi, India*, *Jan - Nov 2016*

- Developed an ant-colony algorithm namely Eigen-ant for game playing.
- Developed low complexity classification framework for EEG signals which achieved lower error rates compared to previous approaches such as SVMs. The proposed methodology learns simpler representations which is illustrated by the lower number of support vectors used. .

Indraprastha Institute of Information Technology(IIIT), Delhi: *Research Assistant under Dr. Sachit Butail* — *Delhi, India*, *Jun - Dec 2015*

- Built a kinematic model to explain how emotional intensity and organization in human crowds affects the spread of panic. The study provided new insights into how certain psychologies are more prone to specific triggers in crowd disasters.
- Developed a dynamical model to simulate changes of perceptual vision field in human crowds. Conducted 10 experimental trials with over 200 participants by giving each individual one of the two specific instructed behaviors to exit the room.

University School of Biotechnology: *Research Intern under Dr. Raghuram* — *Delhi, India*, *Mar – Jun 2014*

- Subjected the whole transcriptome microarray data from a natural knockout mutant to pathway and motif analysis. The aim was to understand genome wide role of G-protein (alpha subunit) in plants.
- The results suggested that at least 64 KEGG pathways were affected and the extensive role(s) for the only known G-protein (alpha subunit gene) in rice was confirmed.

PUBLICATIONS

- Sharma, I., Chourasia, B., Bhatia, A. and Goyal, R., 2016. On the role of evangelism in consensus formation: a simulation approach. *Complex Adaptive Systems Modeling*, *4*(1), p.16. [Link]
- Bhatia A, Singh A, Goyal R. A Hybrid Autonomic Computing-Based Approach to Distributed Constraint Satisfaction Problems. *Computers*. 2015;4(1):2-23. [Link]
- Singh A, Thapar S, Bhatia A, Singh S, Goyal R. Disk Scheduling using a Customized Discrete Firefly Algorithm. *Cogent Eng*. 2015;2(1):1011929. [Link]
- Bhatia A, Johari R. Genetically optimized ACO inspired PSO algorithm for DTNs. In: *3rd International Conference Reliability, Infocom Technologies and Optimization (ICRITO)*. 2014:1-6. [Link]
- Bhatia A, Singh D, Gyan Deep, P. Jangam Annie, R. Pathak Ravi and Raghuram N. Pathway and Motif Analysis of G-protein (α subunit) Regulated Genes in Rice. In: *Advances in Stem Cell Research 2014, SelectBio.* [Link]

RESEARCH TALKS

- Sachit Butail, Abhishek Bhatia, Elham Mohammadi. Speed Modulated Social Influence in Evacuating Pedestrian Crowds. *SIAM Conference on Dynamical Systems, 2017*. [Link]

TEACHING EXPERIENCE

- Teaching Assistant (ECBM 4040 *Neural Networks and Deep Learning*): Columbia University; Dept. of Electrical Engineering; Prof. Zoran Kostic. Sept. 2017- Dec. 2017.
- Teaching Assistant (COMS 4771 *Machine Learning*): Columbia University; Dept. of Computer Science; Prof. G. Creamer. May 2017–July 2017.

TECHNICAL SKILLS

Languages: Java, C++, C, NetLogo, Matlab, R, Python, Shell scripting.
Libraries: Django, Flask, Twisted, TensorFlow, Keras, PyTorch, Caffe.