# *Abhishek Bhatia*

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## Education

**Columbia University** Jan 2017 - May 2018
New York, USA
Master of Science in Computer Science (Machine Learning) *GPA: 3.8/4.0*

**University School of Information, Communication and Technology** 2011- 2015
New Delhi, India
Bachelor of Science in Information Technology *First class with distinction*
Thesis: A Hybrid Autonomic Computing-Based Approach to Distributed Constraint Satisfaction Problems. Link

## Technical Skills

*Programming Languages*: Java, `C++`, `C`, `R`, Matlab, Python, NetLogo.
*Libraries*: Django, Flask, Twisted, TensorFlow, Keras, PyTorch, Caffe.

## Publications

- **Bhatia, A**., Altosaar J. and Gu, S. Proximity-constrained reinforcement learning. NIPS 2017 Workshop, Advances in Approximate Bayesian Inference. Link
- 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. Link
- **Bhatia A**, Singh A, Goyal R. A Hybrid Autonomic Computing-Based Approach to Distributed Constraint Satisfaction Problems. Computers. 2015. Link
- Singh A, Thapar S, **Bhatia A**, Singh S, Goyal R. Disk Scheduling using a Customized Discrete Firefly Algorithm. Cogent Eng. 2015. Link
- **Bhatia A**, Johari R. Genetically optimized ACO inspired PSO algorithm for DTNs. In: $3rd$ International Conference Reliability, Infocom Technologies and Optimization. 2014. Link
- **Bhatia A**, Singh D, Gyan Deep, P. Jangam Annie, R. Pathak Ravi and Raghuram N. Pathway and Motif Analysis of G-protein ($\alpha$ subunit) Regulated Genes in Rice. In: Advances in Stem Cell Research 2014, SelectBio. Link

## Selected Course Projects

**Group Rating Decomposition as a Distribution over Users** Jan 2018 – May 2018
Prof. Tony Jebara Columbia University
- We formalized a representation for groups of users as a mix- ture of user-preference archetypes.
- Subsequently, put forth a novel three step process for decomposing group ratings into a composition of user archetypes. Report-Link

**De(warp/nois)ing Images with Conditional GANs** Jan 2017 – May 2017
Prof. Peter Belhumeur Columbia University
- Used a baseline cGAN for dewarping/denoising images, and understanding why the network blurs out high spatial frequency components. Report-Link, Presentation-Link

**VideoStyle Transfer System** Jan 2017 – May 2017
Dr. Sambit Sahu Columbia University
- 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 was implemented using CNNs. EC2, SQS, SNS, and S3 were used to make the system efficient and scalable. Report-Link, Presentation-Link

## Research Work Experience

**Columbia University** Research Intern, Jaan Altosaar (Prof. David Blei)
New York, NY, USA May 2017 - Present
- Developed a generic, efficient method to make reinforcement learning algorithms more robust by constraining gradient updates of policy parameters.
- Carried out an empirical study to demonstrate that the prosposed method leads to more stable learning and increased exploration.

**Indian Institute of Technology(IIT), Delhi** Project Assistant, Prof. Jayadeva
New Delhi, India Jan 2016 - Nov 2016

• 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 IT (IIIT), Delhi** Research Assistant, Dr. Sachit Butail
New Delhi, India Jun 2015 - 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.

**University School of Biotechnology** Research Intern, Prof. Raghuram
New Delhi, India Mar 2014 - Jun 2014

• The project found 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.

**Research Talks**

• Butail, S., **Bhatia, A.**, Mohammadi, E. 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) Prof. Zoran Kostic
Columbia University; Dept. of Electrical Engineering Sept 2017- Nov 2017

Teaching Assistant (COMS 4771 Machine Learning) Prof. G. Creamer
Columbia University; Dept. of Computer Science May 2017- July 2017

**Relevant Recent Coursework**

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| Machine Learning | Deep Learning | Advanced Machine Learning |
| Natural Language Processing | Bayesian Machine Learning | Reinforcement Learning |
| Analysis of Algorithms | Statistical Inference | |
| Operating Systems | Cloud Computing & Big data | |