

# Abhinav Bhatia

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## INTERESTS

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Artificial Intelligence, Deep Reinforcement Learning, Real-time Planning

## EDUCATION

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<b>University of Massachusetts Amherst</b>	3.94/4
<i>MS/Ph.D. in Computer Science, advised by Prof. Shlomo Zilberstein</i>	<i>Fall 2019 – Present</i>
<b>Birla Institute of Technology and Science (BITS) - Pilani, Pilani Campus</b>	9.27/10
<i>B.E. (Hons.) in Computer Science</i>	<i>Aug. 2011 – May 2015</i>

## EXPERIENCE

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<b>Research Assistant</b>	Fall 2019 - Present
<i>College of Information and Computer Sciences, University of Massachusetts Amherst</i>	
<ul style="list-style-type: none"><li>At <i>Resource Bounded Reasoning</i> lab directed by Prof. Shlomo Zilberstein.</li><li>Conduct research on meta-reinforcement-learning and metareasoning methods, aimed at making autonomous agents operate efficiently with limited samples and time.</li></ul>	
<b>Research Engineer</b>	June 2017 – July 2019
<i>School of Computing and Information Sciences, Singapore Management University</i>	<i>Singapore</i>
<ul style="list-style-type: none"><li>Supervised by Prof. Pradeep Varakantham and Prof. Akshat Kumar.</li><li>Worked on optimizing constrained resource allocation at scale using deep reinforcement learning, which led to a publication at <i>International Conference on Automated Planning and Scheduling (ICAPS) 2019</i>.</li></ul>	
<b>Software Engineer</b>	August 2015 – June 2017
<i>WalmartLabs</i>	<i>Bengaluru, India</i>
<ul style="list-style-type: none"><li>Was part of <i>Operations, Analytics &amp; Research</i> team for supply-chain division of Walmart's eCommerce.</li><li>Developed an Elasticsearch based distributed database for data analysis.</li><li>Developed a deep-learning based system for anomaly-detection in large live incoming data streams.</li></ul>	
<b>Software Development Engineering Intern</b>	January 2015 – June 2015
<i>Amazon</i>	<i>Bengaluru, India</i>
<ul style="list-style-type: none"><li>Worked on offline experience for Prime Video.</li><li>Worked on optimizing content load time for Prime Video on Kindle tablets.</li></ul>	

## PUBLICATIONS

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Samer B. Nashed, Justin Svegliato, **Abhinav Bhatia**, Stuart Russell and Shlomo Zilberstein (2022). "Selecting the partial state abstractions of MDPs: A metareasoning approach with deep reinforcement learning." In *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS 2022)*.

**Abhinav Bhatia**, Justin Svegliato, Samer B. Nashed and Shlomo Zilberstein. "Tuning the Hyperparameters of Anytime Planning: A Metareasoning Approach with Deep Reinforcement Learning". In *Proceedings of the International Conference on Automated Planning and Scheduling (ICAPS 2022)*.

**Abhinav Bhatia**, Philip S. Thomas, and Shlomo Zilberstein. "Adaptive Rollout Length for Model-Based RL Using Model-Free Deep RL". In *(ArXiv 2022)*.

**Abhinav Bhatia**, Justin Svegliato and Shlomo Zilberstein. "On the Benefits of Randomly Adjusting Anytime Weighted A\*". In *Proceedings of the International Symposium on Combinatorial Search (SoCS 2021)*.

**Abhinav Bhatia**, Justin Svegliato and Shlomo Zilberstein. "Tuning the Hyperparameters of Anytime Planning: A Deep Reinforcement Learning Approach". In *ICAPS Workshop on Heuristics and Search for Domain-independent Planning (HSDIP 2021)*.

**Abhinav Bhatia**, Pradeep Varakantham and Akshat Kumar. "Resource Constrained Deep Reinforcement Learning". In *Proceedings of the International Conference on Automated Planning and Scheduling (ICAPS 2019)*.

## TEACHING EXPERIENCE

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### CS383 Artificial Intelligence

*Responsible for designing quizzes, clarifying students' doubts and holding office hours*

UMass Amherst

*Fall 2022*

## MISC.

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- Program committee member, AAAI 2023.
- Paper reviewer, AIJ 2021.
- As a member of IEEE BITS-Pilani chapter, conceptualized, developed and organized an AI bot making competition for a video game at college tech festival 2014.
- Won 1st prize for project *PC 3D Gesture Interface using Kinect* in design appliances category at BITS-Pilani tech festival 2014.
- Offered *Kishore Vaigyanik Protsahan Yojana* fellowship, which is an initiative by govt. of India to encourage young students to pursue a career science research, 2010.

## PROGRAMMING SKILLS

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**Languages:** Experienced in Python, Julia, C/C++, Java. Familiar with C#, SQL

**Framworks:** OpenAI Gym, PyTorch, FluxML, Tensorflow, CPLEX, Elasticsearch, Unity3D

Experienced in implementing a variety of deep reinforcement learning and planning algorithms.

## RELEVANT PH.D. COURSEWORK

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Reinforcement Learning, Machine Learning, Neural Networks, Artificial Intelligence, Robotics, Advanced Algorithms, Empirical Research Methods

## LINKS

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**Webpage:** <https://abhinavbhatia.me>

**Github:** <https://github.com/bhatiaabhinav>

**Google Scholar:** <https://scholar.google.com/citations?user=Y53CNrIAAAAJ&hl>

## CONTACT INFORMATION

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