

# Rushiv Arora

(617)-510-3784

rrarora@cs.umass.edu

**rushivarora.github.io**

www.linkedin.com/in/rushiv-arora

## Research Interests

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Reinforcement Learning, Machine Learning

## Education

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**University of Massachusetts Amherst**

*May 2023*

*M.S. in Computer Science, GPA: 4.0*

Supported by Bay State Fellowship

Advisors: Bruno Castro da Silva, Eliot Moss, Hava Siegelmann

**University of Massachusetts Amherst**

*May 2021*

*B.S. in Computer Science, GPA: 3.975*

*Summa Cum Laude*

Thesis: Machine Learning and Path Optimisation Algorithms for Autonomous Drones

CICS Outstanding Undergraduate Award ([link](#))

**University of Massachusetts Amherst**

*May 2021*

*B.S. in Computer Engineering, GPA: 3.975*

*Summa Cum Laude*

Member of Commonwealth Honors College

ECE Award of Excellence ([link](#))

Capstone Honorable Mention ([link](#))

## Honors and Grants

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**Bay State Fellow, College of Information and Computer Science**

*May, '21 - Present*

**Award by MILA organizers of DARL@ICML: CAD 450**

*July 2022*

**CICS Outstanding Undergraduate Award ([link](#)):** Highest award for CS undergraduates

*May, 2021*

**ECE Award of Excellence ([link](#)):** Highest award for ECE undergraduates

*May, 2021*

**SDP Honorable Mention ([link](#)):** Led team of 4 for capstone project

*May, 2021*

**Commonwealth Honors Research Grant: \$ 1,000** (Highest of the year)

*Sep. 2020*

**Dell Technologies Research Recognition Award**

*July, 2020*

**University of Massachusetts Amherst Chancellor's Award: \$ 14,000/year**

*May '17 - '21*

**Dean's List**

*2017 - 2021*

**Award for Excellence in Computer Science, Mathematics & Physics**

*May '15, May '17*

## Publications

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<b>Hierarchical Universal Value Function Approximators</b> <i>Rushiv Arora, Ignacio Gavier, Eliot Moss</i> Preprint. To be submitted to AAAI 2023	2023
<b>Options for Multi-Task Reinforcement Learning</b> <i>Rushiv Arora, Aline Weber, Bruno Castro da Silva</i> Preprint	2023
<b>On the Dynamics of Learning Time-Aware Behavior with Recurrent Neural Networks</b> <i>Peter Delmastro, Rushiv Arora, Terry Sejnowski, Hava Siegelmann</i> Submitted to NeurIPS 2023	2023
<b>Model-Based Reinforcement Learning with SINDy</b> <i>Rushiv Arora, Eliot Moss, Bruno Castro da Silva</i> DARL Workshop @ The Thirty-ninth International Conference on Machine Learning	2022
<b>A Search and Detection UAV System: from Design to Implementation</b> <i>Mohammadjavad Khosravi, Rushiv Arora, Saeede Ennayti, Hossein Pishro-Nik</i> Submitted to IEEE Transactions on Automation Science and Engineering	2022

## Research Experience

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<b>AI/ML Researcher for the Office of the Global CTO @ Dell Technologies</b> <i>Full-Time (June '23 - Present) and Intern (June '22 - May '22)</i> <ul style="list-style-type: none"><li>• Advised by Michael Robillard</li><li>• Leading the Robotics Research for FY 24 Theme</li><li>• Leading the Research on the Intelligent Functional Edge</li></ul>	<i>June. '23 - Present</i>
<b>Autonomous Learning Lab @ UMass Amherst CICS</b> <i>Master's Thesis and Independent Study</i> <ul style="list-style-type: none"><li>• Advised by Professor Bruno Castro da Silva</li><li>• Master's Thesis: Multi-task option learning</li><li>• Independent Study: Options for Early Life</li></ul>	<i>Jan. '22 - Present</i>
<b>BiNDS Lab @ UMass Amherst CICS</b> <i>Graduate Research Assistant and Independent Study</i> <ul style="list-style-type: none"><li>• Advised by Professors Hava Siegelmann &amp; Terrence Sejnowski</li><li>• Temporal Aspects of Machine Intelligence, and Memory Models</li><li>• Part of TAMI project under DARPA</li></ul>	<i>May. '21 - Present</i>
<b>Office of the Global CTO - OCTO Research @ Dell Technologies</b> <i>Advanced Hardware (MA, USA) and Reinforcement Learning (Brazil) Research Intern</i> <ul style="list-style-type: none"><li>• Advised by Mike Robillard, Trevor Conn, Romulo Pinho</li><li>• Topics: Intelligent Functional Edge &amp; Reinforcement Learning for Digital Twin</li></ul>	<i>Jun. '22 - May '23</i>

**College of Engineering, UMass Amherst***Mar. '19 - May '21**Undergraduate Researcher*

- Advised by Professor Hossein Pishro-Nik
- Thesis/Project: Machine Learning, Autonomous Drones, Algorithms for Autonomy

**Office of the Global CTO - OCTO Research @ Dell Technologies***Jun. '20 - Jul '20**Advanced Hardware Research Intern*

- Advised by Michael Healy, Mike Robillard
- Project I: Research oneAPI and Heterogeneous Computing
- Project II: Self-driving cars on Edge
- Project III: Benchmarking Edge Machine Learning performance

**Non-Research Work Experience**

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**CICS Advising Center, UMass Amherst***Sep. '19 - May '21**Academic Peer Advisor*

- Advised by Alicia Clemente, Laura Melbin

**New York Stem Cell Foundation Research Institute***Jun. '19 - Aug. '19**Software Engineering Intern*

- Advised by Sean DesMarteau, Daniel Paull
- Projects: Code Migration and Web Applications for Array Team

**Teaching Experience**

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**CICS, UMass Amherst***Fall '21 - Present**Graduate Teaching Assistant*

- CS 390A: Machine Learning - Head TA (Spring 2022)
- CS 383: Artificial Intelligence - TA (Fall 2021, Fall 2022)

**M5 ECE Makerspace, UMass Amherst***Fall '18, Fall '19**Undergraduate Instructional Assistant*

- Advised by Professor Baird Soules
- Primary Responsibilities: Supervising Design Projects, Planning Labs, Teaching Content.

**CICS, UMass Amherst***Spring '19**Undergraduate Teaching Assistant*

- Course: CS 220 - Programming Methodology
- Primary Responsibilities: Holding Office hours, Proctoring and Grading

## Leadership Experience

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### Capstone Project, UMass Amherst

*Aug. '20 - May '21*

#### *Team Leader*

- Advised by Professor Dennis Goeckel
- Primary Responsibilities: Responsible for technical integration and making all technical decisions. Working on Cloud, Bluetooth, and Hardware aspects of the project. Overseeing PCB Design.

## Service

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IEEE TVT - Reviewer (Reinforcement Learning)	2022
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UMass CICS College Outstanding Teacher Award Committee	2021
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UMass Commencement Speaker Selection Committee	2021
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## Relevant Coursework

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**Graduate Courses:** Machine Learning, Reinforcement Learning, Probabilistic Graphical Models, Neural Networks and NeuroDynamics, Natural Language Processing, Algorithms in Data Science, Research Methods in Empirical Computer Science, Quantum Computing, Data Visualization and Exploration, Advanced Information Assurance

**Undergraduate Courses:** Artificial Intelligence, Algorithms, Introduction to Computation, Computer Architecture, Security Engineering, Systems and Networking, Embedded System I & II

## References

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### Professor Bruno Castro da Silva

*Assistant Professor, Co-Director of the Autonomous Learning Lab*

bsilva@cs.umass.edu, (413) 658-4869

### Professor Eliot Moss

*Professor Emeritus, Graduate Program Director*

moss@cs.umass.edu, (413) 695-4226

### Professor William Leonard

*Undergraduate Program Director, UMass Amherst College of Engineering*

leonard@ecs.umass.edu, (413) 545-3513

### Michael Robillard

*Senior Director/Senior Distinguished Engineer, Dell Technologies*

Michael.Robillard@dell.com, (508) 335-9543

### Mike Healy

*Senior Principal Engineer Technologist-Distinguished Member, Dell Technologies*

Mike.Healy@dell.com, (617) 797-4052

## Skills

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<b>Programming</b>	Python, Java, Javascript, C, C++, Matlab, Obj-C, Swift, & counting
<b>Machine Learning Frameworks</b>	TensorFlow, PyTorch, Scikit-Learn, Caffe, Keras, Theano
<b>Heterogeneous Computing</b>	SYCL, Data Parallel C++, Intel oneAPI, CUDA
<b>Microprocessors/Microcontrollers</b>	x86, ARM, AVR, NIOS, RPi
<b>Software Development</b>	Angular, React, ExpressJS, NodeJS, .net, iOS Swift/SwiftUI, Postman
<b>Cloud Computing</b>	AWS, Microsoft Azure
<b>Engineering Tools</b>	Qiskit, PSPICE, Altium, Verilog
<b>Version Control</b>	Git
<b>Miscellaneous</b>	Public Speaking, Communication, Presenting

## Adventure Interests/Hobbies

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### NAUI Certified Advanced Scuba Diver

License: FRCB4R1

### SkyDiving Certification (In Progress)

Preliminary Jumps: Banff AB, Niagara ON and Orange MA

### Amateur Broadway Enthusiast

### Live Music Enthusiast