Khimya Khetarpal

CONTACT INFORMATION

McGill University
School of Computer Science
Montreal, Canada

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Website: https://kkhetarpal.github.io/
Publications: *Google Scholar*

EDUCATION

McGill University, Montreal, Canada — September, 2017 - present
Ph.D., Computer Science
GPA: 4.0/4.0, Advisor: Doina Precup

University of Florida, Gainesville, USA — August, 2014 - May 2016
Masters, Computer Engineering
GPA: 3.74/4.0, Advisor: Eakta Jain

Vellore Institute of Technology, Vellore, India — July, 2007 - May 2011
Bachelor of Technology, Electronics and Communication Engineering
GPA: 8.96/10.0

RESEARCH EXPERIENCE

Microsoft Research, Montreal, Canada — Feb, 2022 - June 2022
Research Intern
Mentors: Harm van Seijen, Ida Momennejad

Microsoft Research, Cambridge, UK — Nov, 2021 - Jan 2022
Research Intern
Mentors: Katja Hoffman

DeepMind, London, UK — June, 2021 - Oct 2021
Research Scientist Intern
Mentors: Tom Zahavy and Satinder Singh

DeepMind, Montreal, Canada — July, 2019 - Dec 2019
Research Scientist Intern
Mentors: Gheorghe Comanici and Doina Precup

University of Florida, Gainesville, USA — January, 2016 - June 2016
Research Scholar, Human Centered Computing Lab
Mentor: Eakta Jain

University of Florida, Gainesville, USA — August, 2014 - April 2015
Research Scholar, Machine Intelligence Laboratory
Mentor: Eric Schwartz

Indian Institute of Technology, Kanpur, India — January, 2013 - July, 2014
Research Associate, Intelligent Systems Laboratory
Mentor: Laxmidhar Behera

INDUSTRY EXPERIENCE

Intel , Arizona, USA — July, 2016 - June 2017
Perceptual Computing Software Engineer
Mentor: Farshad Akbhari

Intel , Arizona, USA — May, 2015 - December 2015
Perceptual Computing Software Intern
Mentor: Farshad Akbhari

Robert Bosch, Bangalore, India — July, 2011 - December 2012
Software Engineer
Mentor: Venkatesh Prasad

DELPHI TCI - TIFAC , Vellore, India — December, 2010 - April 2011

Project Intern
Mentor: Sasi Kumar

Honors and Awards

Rising Stars in EECS 2020
"An Academic Career Workshop for Women", UC Berkeley

Finalist, Three Minute Thesis (3MT) Competition, AAAI 2019
"Learning Options with Interest Functions" AAAI Student Abstract

Scholarship Award, Doctoral Consortium, AAAI 2019
One of 18 attendees, Mentor: Michael Littman

Best Paper Award, Lifelong Reinforcement Learning Workshop, ICML 2018
3rd Price, "Attend Before you Act: Leveraging human visual attention for continual learning."

Student Volunteer Award, ICML 2018

McGill School of Computer Science Ph.D. Fellowship 2017
Graduate Excellence Award to pursue a Ph.D. program in Computer Science

CIDSE Doctoral Fellowship Award, Arizona State University (declined) 2017
Award for the first year of study to pursue a PhD degree in Computer Science

Graduate Research Assistantship Award, University of Florida (declined) 2017
Award to pursue a PhD degree in Computer Science

Academic Achievement Award, University of Florida 2014
Funding award in the form of a partial fee waiver during Masters

Best Outgoing Student Award, Nominee, VIT University 2011
6 out of 300 students nominated for this award

Achievement Award, VIT University 2010, 2011
University wide award for dedication in the game of basketball

Merit Scholarship, VIT University 2008, 2009
One out of 60 students for academic excellence

Intellectual Award, by Dreamz (Education Society) Kanpur, India 2005
City wide award for academic performance

PrePrints

[1] **Towards Continual Reinforcement Learning: A Review and Perspectives**
Under Review
Khimya Khetarpal*, Matthew Reimer*, Irina Rish, Doina Precup

[2] **Paradox of Choice: Using Attention in Reinforcement Learning**
Under Review
Khimya Khetarpal*, Andrei Nica*, Doina Precup

[3] **Sequoia: A Software Framework to Unify Continual Learning Research**
Under Review
Fabrice Normandin, Florian Golemo, Oleksiy Ostapenko, Pau Rodriguez, Matthew D Riemer, Julio Hurtado, **Khimya Khetarpal**, Dominic Zhao, Ryan Lindeborg, Timothée Lesort, Laurent Charlin, Irina Rish, Massimo Caccia

Publications

[4] **Temporally Abstract Partial Models**
Neural Information Processing Systems (NeurIPS) 2021 [21% acceptance rate]
Khimya Khetarpal, Zafarali Ahmed, Gheorghe Comanici, Doina Precup

[5] **What can I do here? A Theory of Affordances in Reinforcement Learning**
International Conference on Machine Learning (ICML) 2020 [21.8% acceptance rate]

Featured in MIT Technology Review
Khimya Khetarpal, Zafarali Ahmed, Gheorghe Comanici, David Abel, Doina Precup

[6] **Options of Interest: Temporal Abstraction with Interest Functions**
AAAI Conference on Artificial Intelligence (AAAI) 2020 [20.6% acceptance rate]
Khimya Khetarpal, Martin Klissarov, Maxime Chevalier-Boisvert, Pierre-Luc Bacon, Doina Precup, *Also at Deep RL Workshop (NeurIPS) 2019*

[7] **Value Preserving State Action Abstractions**
International Conference on Artificial Intelligence and Statistics (AISTATS) 2020
David Abel, Nathan Umbanhowar, **Khimya Khetarpal**, Dilip Arumugam, Doina Precup, Michael L. Littman [30% acceptance rate]

[8] **Learning Robust State Abstractions for Hidden-Parameter Block MDPs**
International Conference on Learning Representations (ICLR), 2021
Amy Zhang, Shagun Sodhani, **Khimya Khetarpal**, Joelle Pineau [28.7% acceptance rate]

[9] **Self-Supervised Attention-Aware Reinforcement Learning**
AAAI Conference on Artificial Intelligence (AAAI) 2021
Haiping Wu, **Khimya Khetarpal**, Doina Precup [21% acceptance rate]

[10] **Variance Penalized On-Policy and Off-Policy Actor-Critic**
AAAI Conference on Artificial Intelligence (AAAI) 2021
Arushi Jain, Gandharv Patil, Ayush Jain, **Khimya Khetarpal**, Doina Precup
[21% acceptance rate]

[11] **Learning Options with Interest Functions**
In Proceedings of the AAAI Student Abstract and Poster Program (AAAI) 2019
Selected for 3 Minute Thesis (3MT) Finalist [29% acceptance rate]
Khimya Khetarpal, Doina Precup

[12] **Learning Generalized Temporal Abstractions Across Both Action and Perception**
In Proceedings of the 24th AAAI/SIGAI Doctoral Consortium (AAAI) 2019
Scholarship Awarded [29% acceptance rate]
Khimya Khetarpal

[13] **Variational State Encoding as Intrinsic Motivation in Reinforcement Learning**
The Multi-disciplinary Conference on Reinforcement Learning and Decision Making (RLDM) 2019
Martin Klissarov*, Riashat Islam*, **Khimya Khetarpal**, Doina Precup

[14] **Attend Before you Act: Leveraging human visual attention for continual learning**
In Lifelong Learning: A Reinforcement Learning Approach Workshop (ICML) 2018
Best Paper Award-3rd Place
Khimya Khetarpal, Doina Precup

[15] **Environments for Lifelong Reinforcement Learning**
Continual Learning Workshop, (NeurIPS), 2018
Khimya Khetarpal*, Shagun Sodhani*, Sarath Chandar, Doina Precup

[16] **RE-EVALUATE: Reproducibility in Evaluating Reinforcement Learning Algorithms**
In Reproducibility in Machine Learning Workshop, (ICML) 2018
Khimya Khetarpal*, Zafarali Ahmed*, Andre Cianflone, Riashat Islam, Joelle Pineau

[17] **Safe Option-Critic: Learning Safety in the Option-Critic Architecture**
In Adaptive Learning Agents Workshop, (ICML) 2018
Published in a special issue of The Knowledge Engineering Review, 2021.
Arushi Jain*, **Khimya Khetarpal***, Doina Precup

[18] **Creating segments and effects on comics by clustering gaze data**
ACM Transactions on Multimedia Computing, Communications, and Applications (TOMM), 2017 [2.25 impact factor]
Thirunarayanan Ishwarya, **Khimya Khetarpal**, Sanjeev Koppal, Olivier Le Meur, John Shea, Eakta Jain

[19] **A preliminary benchmark of four saliency algorithms on comic art**
IEEE International Conference on Multimedia & Expo Workshops (ICMEW), 2016
Khimya Khetarpal, Eakta Jain

[20] **Mobile robot navigation using evolving neural controllers in unstructured environments.**
Advances in Control and Optimization of Dynamical Systems, IFAC Proceedings, 2014
Awhan Patnaik, **Khimya Khetarpal**, Laxmidhar Behera

Invited Talks

Bridging State and Action: Towards Continual Reinforcement Learning

Brown Robotics Lab, Brown University	2022
Microsoft Research, NYC	2022
Microsoft Research, Montreal	2022
Deepmind, Edmonton	2022
Google Research, India	2022

Temporally Abstract Partial Models

Neural Information Processing Systems (NeurIPS), Online	2021
Reinforcement Learning-Sofa, Mila Montreal	2021
MSR RL Reading Group, Cambridge	2021
Deepmind, Montreal, Online	2021

Towards Continual Reinforcement Learning

RIKEN Center for Advanced Intelligence Project	
Approximate Bayesian Inference Team (Japan), Online	2021

A Theory of Affordances in Reinforcement Learning

International Conference on Machine Learning, Online	2020
Reinforcement Learning-Sofa, Mila Montreal	2020
Reinforcement Learning and Artificial Intelligence, University of Alberta	2020
Google Brain-DeepMind Tea Talk, Montreal	2019

Options of Interest: Temporal Abstraction with Interest Functions

AAAI Conference on Artificial Intelligence (AAAI), New York	2020
DeepMind, Hierarchical Reinforcement Learning Meeting, Montreal	2019
Reinforcement Learning-Sofa, Mila Montreal	2019
3 Minute Thesis (3MT) Competition Finalist (AAAI), Hawaii	2019

Learning Generalized Temporal Abstractions Across Both Action and Perception

AAAI/SIGAI Doctoral Consortium (DC) at (AAAI), Hawaii	2019

Attend Before you Act: Leveraging human visual attention for continual learning
In Lifelong Learning: A Reinforcement Learning Approach Workshop, (ICML), Stockholm 2019

Introduction to Computer Vision
Second Informative Talks on Technical Topics (ITTT), McGill IEEE Student Branch, Montreal 2018

Learning Visual Representations
Arizona State University, Active Perception Group, Tempe 2017

Empowering high school girls in STEM
Women in Deep Learning, Deep Learning Summer School, University of Montreal 2016

A preliminary benchmark of four saliency algorithms on comic art
IEEE International Conference on Multimedia & Expo Workshops (ICMEW), Seattle 2016

Service And Leadership

Peer Advising Office Hours - Cofounder 2021
Mila, Montreal

ICLR Workshop Organizer 2021
Never Ending Reinforcement Learning

Mila admissions committee 2020
Mila, Montreal

Mentoring 2020
Haiping Wu (McGill Masters - Now at Tusimple),
Gabriela Moisescu-Pareja (McGill Masters)

Reviewer 2018-Present
ICML, AAAI, ICLR, NeurIPS, AISTATS, AI4Social Good Workshop,
Reproducibility Challenge, Deep RL Workshop, EcoRL Workshop

WiML ICML Un-Workshop Breakout Session Organizer 2020
Continual Reinforcement Learning

RLDM Workshop Organizer 2019
Lifelong Learning: A Reinforcement Learning Approach (LLARLA)

ICML Workshop Organizer 2019
Multi-Task and Lifelong Reinforcement Learning Workshop

Area Chair 2018
Women in Machine Learning (WiML), NeurIPS

Program Committee 2018
Continual Learning Workshop, NeurIPS

Teaching Experience

COMP-767 Reinforcement Learning, Teaching Assistant
Graduate Course, Computer Science, McGill University Winter 2020

Reinforcement Learning, Lecturer
AI4Good Lab Summer 2020

Reinforcement Learning, Invited Talk
IVADO Summer School Fall 2019

Hierarchical Reinforcement Learning, Guest Lecturer
Management Studies, McGill University Winter 2019

Deep Reinforcement Learning, Lecturer

AI4Good Lab Summer 2019

Machine Learning, Teaching Assistant
AI4Good Lab Summer 2018

COMP-208 Computers in Engineering, Teaching Assistant
Undergraduate Course, Computer Science, McGill University Winter 2018

Media Coverage

A Theory of Affordances in Reinforcement Learning
A concept in psychology is helping AI to better navigate our world, MIT Technology Review

Outreach

Graduate School Applications, Mentor 2020

Techno Feminine Event: AI to change the world, Volunteer 2019

Skype a Scientist, Volunteer 2019

Women in Innovation and Artificial Intelligence, Mentor
McGill Innovation Week 2017

Engineering Projects in Community Service, Judge
Arizona State University 2017

FIRST Robotics Competition, Mentor
University of Florida, Gainesville 2016

International Society for Technology in Education, Volunteer
VIT University Student Chapter 2007

Red Cross Youth, Volunteer
VIT University Chapter 2007