

# Khimya Khetarpal

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CONTACT INFORMATION	McGill University School of Computer Science Montreal, Canada	<i>E-mail:</i> <a href="mailto:khimya.khetarpal@mail.mcgill.ca">khimya.khetarpal@mail.mcgill.ca</a> <i>Website:</i> <a href="https://kkhetarpal.github.io/">https://kkhetarpal.github.io/</a> <i>Publications:</i> <a href="#">Google Scholar</a>
EDUCATION	<b>McGill University</b> , Montreal, Canada <i>Ph.D., Computer Science</i> GPA: 4.0/4.0, Advisor: Doina Precup  <b>University of Florida</b> , Gainesville, USA <i>Masters, Computer Engineering</i> GPA: 3.74/4.0, Advisor: Eakta Jain  <b>Vellore Institute of Technology</b> , Vellore, India <i>Bachelor of Technology, Electronics and Communication Engineering</i> GPA: 8.96/10.0	September, 2017-2022 (Expected)  August, 2014 - May 2016  July, 2007 - May 2011
RESEARCH EXPERIENCE	<b>Microsoft Research</b> , Montreal, Canada <i>Research Intern</i> Mentors: Harm van Seijen, Ida Momennejad  <b>Microsoft Research</b> , Cambridge, UK <i>Research Intern</i> Mentors: Katja Hoffman  <b>DeepMind</b> , London, UK <i>Research Scientist Intern</i> Mentors: Tom Zahavy and Satinder Singh  <b>DeepMind</b> , Montreal, Canada <i>Research Scientist Intern</i> Mentors: Gheorghe Comanici and Doina Precup  <b>University of Florida</b> , Gainesville, USA <i>Research Scholar, Human Centered Computing Lab</i> Mentor: Eakta Jain  <b>University of Florida</b> , Gainesville, USA <i>Research Scholar, Machine Intelligence Laboratory</i> Mentor: Eric Schwartz  <b>Indian Institute of Technology, Kanpur</b> , India <i>Research Associate, Intelligent Systems Laboratory</i> Mentor: Laxmidhar Behera	Feb, 2022 - Aug 2022  Nov, 2021 - Jan 2022  June, 2021 - Oct 2021  July, 2019 - Dec 2019  January, 2016 - June 2016  August, 2014 - April 2015  January, 2013 - July, 2014
INDUSTRY EXPERIENCE	<b>Intel</b> , Arizona, USA <i>Perceptual Computing Software Engineer</i> Mentor: Farshad Akbhari  <b>Intel</b> , Arizona, USA <i>Perceptual Computing Software Intern</i> Mentor: Farshad Akbhari  <b>Robert Bosch</b> , Bangalore, India <i>Software Engineer</i> Mentor: Venkatesh Prasad  <b>DELPHI TCI - TIFAC</b> , Vellore, India	July, 2016 - June 2017  May, 2015 - December 2015  July, 2011 - December 2012  December, 2010 - April 2011

*Project Intern*  
Mentor: Sasi Kumar

## HONORS & AWARDS

INTERNATIONAL	<b>Rising Stars in EECS</b>	2020
	“An Academic Career Workshop for Women”, UC Berkeley	
	<b>Finalist, Three Minute Thesis (3MT) Competition, AAAI</b>	2019
	“Learning Options with Interest Functions” AAAI Student Abstract	
	<b>Scholarship Award, Doctoral Consortium, AAAI</b>	2019
	One of 18 attendees, Mentor: Michael Littman	
	<b>Best Paper Award, Lifelong Reinforcement Learning Workshop, ICML</b>	2018
	3rd Price, “Attend Before you Act: Leveraging human visual attention for continual learning.”	
	<b>Student Volunteer Award, ICML</b>	2018
INSTITUTIONAL	<b>McGill School of Computer Science Ph.D. Fellowship</b>	2017
	Graduate Excellence Award to pursue a Ph.D. program in Computer Science	
	<b>CIDSE Doctoral Fellowship Award, Arizona State University (declined)</b>	2017
	Award for the first year of study to pursue a PhD degree in Computer Science	
	<b>Graduate Research Assistantship Award, University of Florida (declined)</b>	2017
	Award to pursue a PhD degree in Computer Science	
	<b>Academic Achievement Award, University of Florida</b>	2014
	Funding award in the form of a partial fee waiver during Masters	
	<b>Best Outgoing Student Award, Nominee, VIT University</b>	2011
	6 out of 300 students nominated for this award	
	<b>Achievement Award, VIT University</b>	2010, 2011
	University wide award for dedication in the game of basketball	
	<b>Merit Scholarship, VIT University</b>	2008, 2009
	One out of 60 students for academic excellence	
	<b>Intellectual Award, by Dreamz (Education Society) Kanpur, India</b>	2005
	City wide award for academic performance	

## PUBLICATIONS

PREPRINTS	[P3] <b>POMRL: No-Regret Learning-to-Plan with Increasing Horizons</b>	
	Under Review	
	<u>Khimya Khetarpal*</u> , Claire Vernade*, Brendan O'Donoghue, Satinder Singh, Tom Zahavy	
	[P2] <b>Towards Continual Reinforcement Learning: A Review and Perspectives</b>	
	Under Review	
	<u>Khimya Khetarpal*</u> , Matthew Reimer*, Irina Rish, Doina Precup	
	[P1] <b>Paradox of Choice: On the Role of Attention in Reinforcement Learning</b>	
	Under Review	
	<u>Khimya Khetarpal*</u> , Andrei Nica*, Doina Precup	
JOURNAL ARTICLES	[J2] <b>Safe Option-Critic: Learning Safety in the Option-Critic Architecture</b>	
	<i>Published in a special issue of The Knowledge Engineering Review, (KER) 2021.</i>	
	Also appeared <i>In Adaptive Learning Agents Workshop, (ICML) 2018</i>	
	Arushi Jain*, <u>Khimya Khetarpal*</u> , Doina Precup	

- [J1] **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
- [C9] **Temporally Abstract Partial Models**  
*Neural Information Processing Systems (NeurIPS) 2021* [21% acceptance rate]  
Khimya Khetarpal, Zafarali Ahmed, Gheorghe Comanici, Doina Precup
- [C8] **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]
- [C7] **Self-Supervised Attention-Aware Reinforcement Learning**  
*AAAI Conference on Artificial Intelligence (AAAI) 2021*  
 Haiping Wu, **Khimya Khetarpal**, Doina Precup [21% acceptance rate]
- [C6] **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]
- [C5] **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
- [C4] **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*
- [C3] **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]
- [C2] **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
- [C1] **Mobile robot navigation using evolving neural controllers in unstructured environments.**  
*Advances in Control and Optimization of Dynamical Systems, IFAC Proceedings, 2014*  
 Awahan Patnaik, Khimya Khetarpal, Laxmidhar Behera

- [W7] **Sequoia: A Software Framework to Unify Continual Learning Research**  
*In Theory and Foundation of Continual Learning Workshop (ICML) 2021*  
 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

- [W6] **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
- [W5] **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
- [W4] **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
- [W3] **Environments for Lifelong Reinforcement Learning**  
*Continual Learning Workshop, (NeurIPS), 2018*  
Khimya Khetarpal<sup>\*</sup>, Shagun Sodhani<sup>\*</sup>, Sarath Chandar, Doina Precup
- [W2] **RE-EVALUATE: Reproducibility in Evaluating Reinforcement Learning Algorithms**  
*In Reproducibility in Machine Learning Workshop, (ICML) 2018*  
Khimya Khetarpal<sup>\*</sup>, Zafarali Ahmed<sup>\*</sup>, Andre Cianflone, Riashat Islam, Joelle Pineau
- [W1] **A preliminary benchmark of four saliency algorithms on comic art**  
*IEEE International Conference on Multimedia & Expo Workshops (ICMEW), 2016*  
Khimya Khetarpal, Eakta Jain

#### INVITED TALKS

<b>Bridging State and Action: Towards Continual Reinforcement Learning</b>	
RLAI Lab, University of Alberta, Edmonton	2022
Brown Robotics Lab, Brown University	2022
Microsoft Research, NYC	2022
Microsoft Research, Montreal	2022
Deepmind, Edmonton	2022
Google Research, India	2022
<b>Temporally Abstract Partial Models</b>	
Neural Information Processing Systems (NeurIPS), Online	2021
Reinforcement Learning-Sofa, Mila Montreal	2021
MSR RL Reading Group, Cambridge	2021
Deepmind, Montreal, Online	2021
<b>Towards Continual Reinforcement Learning</b>	
RIKEN Center for Advanced Intelligence Project	
Approximate Bayesian Inference Team (Japan), Online	2021
<b>A Theory of Affordances in Reinforcement Learning</b>	
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

SERVICE & LEADERSHIP INITIATIVES CHAIRING WORKSHOP CHAIRING PROGRAM COMMITTEES	<b>Options of Interest: Temporal Abstraction with Interest Functions</b>	
	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
	<b>Learning Generalized Temporal Abstractions Across Both Action and Perception</b>	
	AAAI/SIGAI Doctoral Consortium (DC) at (AAAI), Hawaii	2019
	<b>Attend Before you Act: Leveraging human visual attention for continual learning</b>	
	In Lifelong Learning: A Reinforcement Learning Approach Workshop, (ICML), Stockholm	2019
	<b>Introduction to Computer Vision</b>	
	Second Informative Talks on Technical Topics (ITTT), McGill IEEE Student Branch, Montreal	2018
	<b>Learning Visual Representations</b>	
	Arizona State University, Active Perception Group, Tempe	2017
	<b>Empowering high school girls in STEM</b>	
	Women in Deep Learning, Deep Learning Summer School, University of Montreal	2016
	<b>A preliminary benchmark of four saliency algorithms on comic art</b>	
	IEEE International Conference on Multimedia & Expo Workshops (ICMEW), Seattle	2016
	<b>Peer Advising Office Hours - Cofounder</b>	2021
	<i>Mila, Montreal</i>	
	<b>Area Chair</b>	2018
	<i>Women in Machine Learning (WiML), NeurIPS</i>	
	<b>Lead Organizer</b>	2021
	<i>Never Ending Reinforcement Learning at ICLR.</i>	
	<b>Organizer</b>	2021
	<i>Beyond the research paper at ICLR.</i>	
	<b>Lead Organizer</b>	2020
	<i>WiML ICML Un-Workshop Breakout Session Organizer on Continual Reinforcement Learning</i>	
	<b>Lead Organizer</b>	2019
	<i>Lifelong Learning: A Reinforcement Learning Approach (LLARLA) at RLDM</i>	
	<b>Organizer</b>	2019
	<i>Multi-Task and Lifelong Reinforcement Learning Workshop at ICML</i>	
	<b>Mila Admissions Committee</b>	2020
	<i>Mila, Montreal</i>	
	<b>Reviewer</b>	2020
	<i>International Conference on Machine Learning (ICML)</i>	
	<b>Reviewer</b>	2019-2020, 2022
	<i>International Conference on Learning Representations (ICLR)</i>	
	<b>Reviewer</b>	2021 - 2022

	<i>International Conference on Artificial Intelligence and Statistics (AISTATS)</i>	
	<b>Reviewer</b>	2020 - 2022
	<i>Conference on Neural Information Processing Systems (NeurIPS)</i>	
	<b>Reviewer for workshops in machine learning</b>	Active
	<i>Decision Awareness in Reinforcement Learning, ICML 2022</i>	
	<i>Ecological Theory of Reinforcement Learning, NeurIPS 2021</i>	
	<i>Deep Reinforcement Learning, NeurIPS 2020-2021</i>	
	<i>ML Reproducibility Challenge, NeurIPS 2020</i>	
	<i>Continual Learning, NeurIPS 2018</i>	
	<i>AI4Social Good , NeurIPS 2018</i>	
TEACHING & MENTORING	<b>Gabriela</b> , Masters, CS, McGill University	
ADVISING	Co-supervised with Doina Precup.	2021-2023
	<b>Haiping Wu</b> , Masters, CS, 2021, McGill University	
	Co-authored [C7]. Co-supervised with Doina Precup.	2019-2021
TEACHING APPOINTMENTS	<b>COMP-767 Reinforcement Learning</b> , Teaching Assistant	
	<i>Graduate Course, Computer Science, McGill University</i>	Winter 2020
	<b>Reinforcement Learning</b> , Lecturer	
	<i>AI4Good Lab</i>	Summer 2020
	<b>Reinforcement Learning</b> , Invited Talk	
	<i>IVADO Summer School</i>	Fall 2019
	<b>Hierarchical Reinforcement Learning</b> , Guest Lecturer	
	<i>Management Studies, McGill University</i>	Winter 2019
	<b>Deep Reinforcement Learning</b> , Lecturer	
	<i>AI4Good Lab</i>	Summer 2019
	<b>Machine Learning</b> , Teaching Assistant	
	<i>AI4Good Lab</i>	Summer 2018
	<b>COMP-208 Computers in Engineering</b> , Teaching Assistant	
	<i>Undergraduate Course, Computer Science, McGill University</i>	Winter 2018
DIVERSITY, EQUITY & INCLUSION	<b>Super-Volunteer</b> , Women in Machine Learning	
	<i>Assisted and led initiatives for WiML on social media across multiple WiML venues</i>	2020-21
	<b>Mentor</b> , Mementor	2021
	<i>Conference on Neural Information Processing Systems (NeurIPS)</i>	
	<b>Volunteer</b> , Techno Feminine Event: AI to change the world	2019
	<b>Mentor</b> , Skype a Scientist	2019
	<b>Mentor</b> , Women in Innovation and Artificial Intelligence	
	<i>McGill Innovation Week,</i>	2017
	<b>Judge</b> , Engineering Projects in Community Service	
	<i>EPICS High Showcase, Arizona State University</i>	2017
	<b>FIRST Robotics Competition</b> , Mentor	
	<i>University of Florida, Gainesville</i>	2016
	<b>Volunteer</b> , International Society for Technology in Education	
	<i>VIT University Student Chapter</i>	2007
	<b>Volunteer</b> , Red Cross Youth	
	<i>VIT University Chapter</i>	2007

MEDIA COVERAGE **A Theory of Affordances in Reinforcement Learning**  
[A concept in psychology is helping AI to better navigate our world](#), MIT Technology Review

**Autonomous Mobile Robot – AUMORO**

[UF robotics demo](#), The Gainesville Sun

[UF Engineers Display Intelligent Machines At Robot Demo Day](#), WUFT