

Veronica Chelu

PhD Candidate at McGill University,
School of Computer Science,
Montreal, Canada

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Research

direction **Learning algorithms for reinforcement learning (RL) & sequential decision making.**

interests *RL & sequential decision making, policy optimization, online learning, deep learning.*

enthusiastic@ *causality, robotics, neuroscience, psychology, pharmacology.*

Education

2019– **Ph.D. in Computer Science**, McGill University, Montreal.

present *Specialization: Artificial Intelligence, Reinforcement Learning. Dissertation topic: Towards efficient credit assignment algorithms in RL—leveraging models to learn, plan and adapt. Advised by Prof. Doina Precup.*

2016–2018 **M.Sc in Computer Science**, University “Politehnica” Bucharest, Bucharest.

Specialization: Artificial Intelligence. Master Thesis: The influence of exploratory behaviour on temporal abstraction and subgoal identification in hierarchical reinforcement learning.

2009–2013 **B.Sc in Computer Science**, University “Politehnica” Bucharest, Bucharest.

Bachelor Thesis: Emotion simulation on virtual 3D face models.

Publications

- [1] **Veronica Chelu**, Tom Zahavy, Arthur Guez, Doina Precup, and Sebastian Flennerhag. *Optimism and adaptivity in policy optimization*. in submission.
- [2] Arushi Jain, **Veronica Chelu**, Sharan Vaswani, Arthur Guez, and Nicolas Le Roux. *Actor-critic as a joint maximization problem*. RLDM 2022.
- [3] **Veronica Chelu**, Diana Borsa, Doina Precup, and Hado van Hasselt. *Selective Credit Assignment*. arXiv 2022, [pdf].
- [4] Ray Jiang, Shangdong Zhang, **Veronica Chelu**, Adam White, and Hado van Hasselt. *Learning Expected Emphatic Traces for Deep RL*. AAAI 2022, [pdf].
- [5] Anthony GX-Chen, **Veronica Chelu**, Blake A. Richards, and Joelle Pineau. *A Generalized Bootstrap Target for Value-Learning, Efficiently Combining Value and Feature Predictions*. AAAI 2022, [pdf].
- [6] **Veronica Chelu**, Doina Precup, and Hado van Hasselt. *Forethought and Hindsight in Credit Assignment*. In: Proceedings of Neural Information Processing Systems (NeurIPS) 2020. [pdf].
- [7] Anthony GX-Chen, **Veronica Chelu**, Blake Richards, and Joelle Pineau. *Lambda Successor Return Error*. In: Biological and Artificial Reinforcement Learning Workshop at Neural Information Processing Systems (NeurIPS) 2020.
- [8] **Veronica Chelu** and Doina Precup. *Option Discovery by Aiming to Predict*. In: Proceedings of Reinforcement Learning and Decision Making (RLDM), in Multi-Task and Lifelong Reinforcement Learning Workshop and in Self-Supervised Learning Workshop at International Conference on Machine Learning (ICML) 2019. [pdf].
- [9] **Veronica Chelu**. *Temporal abstraction and subgoal discovery by clustering successor features*. In: Women in Machine Learning (WIML) Workshop 2018. [poster].
- [10] **Veronica Chelu**. *The influence of exploratory behaviour on temporal abstraction and subgoal identification*. Transylvanian Machine Learning Summer School (2018) - Best Poster Award. [poster].
- [11] **Veronica Chelu***, J. Baek*, L. Iordache, V Paunescu, A. Ghiuta H. Ryu, Y. Soh A. Petreanu, A. Leica, and B. Jeon. *Scene Understanding Networks for Autonomous Driving based on Around*

View Monitoring System. In: Workshop on Autonomous Driving, Conference on Computer Vision and Pattern Recognition (CVPR) 2018. [pdf].

■ Academic experience, teaching & talks

- Summer 2023 **Research supervision of two undergrads: Nathan De Lara, and Steve Wen.**
- June 2023 **Talk on Optimism and Adaptivity**, *Mila RL workshop 2023*.
- Summer 2020 **Talk on Forethought and Hindsight in Reinforcement Learning**, *RL Sofa, Mila 2020*.
- Summer 2020 **Teaching assistant and mentor**, *AI4SocialGood Summer Lab 2020*, [details].
- Winter 2020 **Teaching assistant for the Reinforcement Learning course**, *McGill University*, [Comp767].
- July 2019 **Contributed talk on Option Discovery by Aiming to Predict**, *Modeling Inductive Biases in Reinforcement Learning Workshop*, at Reinforcement Learning and Decision Making (RLDM) 2019.
- Spring 2018 **Lecturer for Deep Learning for Visual Arts**, *Faculty of Mathematics and Computer Science, University of Bucharest*.
- June 2018 **Applied deep learning for vision, sound and control**, *Faculty of Mathematics and Computer Science, University of Bucharest*, Recent Advances in Artificial Intelligence (RAAI) 2018.
- Summer 2018 **Lectures and workshops on Reinforcement Learning**, *University "Politehnica" Bucharest*, ROSEdu - Romanian Open Source Education, [details].

■ Academic awards

- 2022-2024 **FRQNT, Fonds de recherche du Quebec**, *Nature and Technology*.
- 2021-2022 **IVADO's PhD Excellence scholarship**.
- 2020-2021 **Borealis AI 2020-2021 Fellowship**.
- 2016-2018 **Excellence Scholarship**, *for the M.Sc in Computer Science and Engineering at University "Politehnica" Bucharest*, funded by the Romanian government.
- 2016-2018 **Merit Scholarship**, *for the M.Sc in Computer Science and Engineering at University "Politehnica" Bucharest*, funded by the Romanian government.
- 2009-2013 **Merit Scholarship**, *for the B.Sc in Computer Science at University "Politehnica" Bucharest*, funded by the Romanian government.

■ Industry experience

- April 2022 – April 2023 **Research Scientist Intern**, *DeepMind*, Montreal, CA.
- Feb 2020 – July 2020 **Research Scientist Intern**, *DeepMind*, London, UK, Core RL team.
- 2016–2018 **Research Engineer**, *Apsisware*, Bucharest, LG Electronics R&D team.
Worked on: *Scene Understanding for assisted technology and autonomous driving and Generative models with application to facial recognition*
- 2016 **Machine Learning Engineer**, *Sparktech Software*, Bucharest.
- 2015 **Software Engineer**, *Deutsche Bank*, Bucharest.

2014 **Software Engineer**, *Misys*, Bucharest.
2013 **Software Engineer**, *Cronian Labs*, Bucharest.

Committee, reviewing and volunteering

July 2020 **Top Reviewer - top 33% ranking**, *ICML 2020*.
October 2020 **Reviewer**, *Deep Reinforcement Learning Workshop at NeurIPS 2020*.
July 2019 **Reviewer**, *Multitask and Lifelong Reinforcement Learning Workshop at ICML 2019*.
December 2019 **Reviewer**, *Women in Machine Learning (WIML) Workshop at NeurIPS 2019*.
December 2018 **Reviewer**, *Continual Learning Workshop at NeurIPS 2018*.
December 2018 **Reviewer**, *Women in Machine Learning (WIML) Workshop at NeurIPS 2018*.

Training courses

Fall 2019 **Probabilistic Analysis of Algorithms and Data Structures**, *with Prof. Dr. Luc Devroye*, COMP 690 at McGill University.
Summer 2019 **Deep Learning and Reinforcement Learning Summer School (DLRL) 2019**, *at University of Alberta*.
Summer 2018 **Transylvanian Machine Learning Summer School (TMLSS) 2018**, <https://tmlss.ro/>.

Computer & programming skills

General Python, C, C++, Git, Unix, Latex.
Machine Learning Jax, Tensorflow, Pytorch, Numpy, Matplotlib.

Life

meditation enthusiast, conciousness explorer, yoga instructor (200h RYT), amateur hand-balancer & acrobat.