Veronica Chelu

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

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🌐 *veronicachelu.github.io*

Research

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

interests | *RL & sequential decision making, policy optimization, deep & continual learning*

enthusiastic@ | *plasticity in humans and machines, psychedelic research, neuroscience, causality, robotics*

Education

2019– present **Ph.D. in Computer Science**, *McGill University*, Montreal
Towards efficient continual learning and planning 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. *Acceleration in policy optimization*. EWRL 2023, 🗎, in submission @ NeurIPS 2023.

[2] Arushi Jain, **Veronica Chelu**, Sharan Vaswani, and Nicolas Le Roux. *Actor-critic as a joint maximization problem*. accepted @ RLDM 2022, ↗.

[3] **Veronica Chelu**, Diana Borsa, Doina Precup, and Hado van Hasselt. *Selective Credit Assignment*. arXiv 2022, 🗎.

[4] Ray Jiang, Shangtong Zhang, **Veronica Chelu**, Adam White, and Hado van Hasselt. *Learning Expected Emphatic Traces for Deep RL*. AAAI 2022, 🗎.

[5] Anthony GX-Chen, **Veronica Chelu**u, Blake A. Richards, and Joelle Pineau. *A Generalized Bootstrap Target for Value-Learning, Efficiently Combining Value and Feature Predictions*. AAAI 2022, 🗎.

[6] **Veronica Chelu**, Doina Precup, and Hado van Hasselt. *Forethought and Hindsight in Credit Assignment*. In: Proceedings of Neural Information Processing Systems (NeurIPS) 2020. 🗎.

[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. 🗎.

[9] **Veronica Chelu**. *Temporal abstraction and subgoal discovery by clustering successor features*. In: Women in Machine Learning (WIML) Workshop 2018.

[10] **Veronica Chelu**. *The influence of exploratory behaviour on temporal abstraction and subgoal identification*. Transylvanian Machine Learning Summer School (2018) - Best Poster Award. 🗎.

[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. 🗎.

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

Academic experience, teaching & talks

Summer 2023	**Undergrad research supervision**, *Nathan De Lara (project: Model-based learning for non-stationary continuous control environments), and Steve Wen (project: Adaptive exploration for non-stationary continuous control environments)*
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]

Committee, reviewing and volunteering

Conference proceedings, *NeurIPS (2021, 2023), ICLR (2022), ICML (top 33% 2020)*

Workshops, *Deep RL Workshop NeurIPS (2020, 2021) Multitask and Lifelong Reinforcement Learning Workshop ICML (2019), WIML NeurIPS (2018, 2019), Continual Learning Workshop 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**, [↗]

Computer & programming skills

General Python, C, C++, Git, Unix, Latex

Machine Learning Jax, Tensorflow, Pytorch, Numpy, Matplotlib

Life

meditation & yoga (practitioner & certified instructor 200h RYT), conciousness explorer, self-taught amateur hand-balancer & contortionist