Tamás Madarász - CV

JPMorgan Chase ◇ tamasmadarasz1@gmail.com ◇ tamasmadarasz.com

Research Interests

• Reinforcement Learning • Model-Based Planning • Deep Learning
• Probabilistic World Models • Transfer, Multi-Task and Meta Learning
• Natural Language Processing • Computer Vision • Causality

Application Domains

• Chip design • Compiler optimization • Drug discovery

Positions

October 2022 -	Decision Science Lead (VP) JPMorgan Chase
Dec 2021 - October 2022	Staff Research Scientist/Deep Learning Researcher Mediatek Research
Dec 2020 -Dec 2021	ML Researcher AI Theory Group, Noah's Ark lab Huawei UK R&D
June 2020 -Dec 2020	AI/ML fellow GlaxoSmithKleine
March 2018 - May 2020	Postdoctoral fellow University of Oxford, UCL
October 2015 - December 2017	Postdoctoral fellow University of Geneva, Laboratory of Cognitive Computational Neuroscience.

Education

PhD	Center for Neural Science, New York University Advisors: Joseph E. LeDoux and Joshua P. Johansen.
BA (Hons.)	Mathematics, Trinity College, University of Cambridge.
Diplôme Superieur d'Enseignement	Ecole Normale de Musique de Paris (Master's M2, Cello)
Diplom	Robert-Schumann-Academy, Düsseldorf Master of Music in Performance (Cello)

Awards

2019	NeurIPS travel award
2015	RLDM travel fellowship
2015	COSYNE travel grant
2014-2015	Samuel J. and Joan B. Williamson Dissertation Fellowship
2014	NYU Dean's Dissertation Fellowship
2014	NYU Dean's Travel Grant award
2009-2014	MacCracken Graduate Fellowship
1999-2002	Cambridge Overseas Trust and Trinity College full undergraduate scholarship
2006-2008	Scholar of the French Government and the Île-de-France Regional Council

Publications

Madarasz TJ (2022)
LPI: Learned Positional Invariances for Transfer of Task Structure and Zero-shot Planning.
***ICML**, 39th International Conference on Machine Learning, Workshop on Responsible Decision Making in Dynamic Environments.*

Parisot S, Esperanca PM, McDonagh S, **Madarasz TJ**, Yang Y, Li Z (2022)
Long-tail Recognition via Compositional Knowledge Transfer.
***CVPR**, 2022 IEEE Conference on Computer Vision and Pattern Recognition .*

Madarasz TJ , Behrens TEJ (2020)
Learning transferable task schemas by representing causal invariances.
***ICLR**, Eighth International Conference on Learning Representations, Causal learning for decision making workshop.*

Madarasz TJ, Behrens TEJ (2019)
Better transfer learning with inferred successor maps.
***NeurIPS**, 33rd Conference on Neural Information Processing Systems, Vancouver, Canada.*
Spotlight oral presentation *(<3% of submissions).*

Madarasz TJ, Behrens TEJ (2019)
Inferred predictive maps in the hippocampus for better transfer learning. **RLDM**, *Multidisciplinary Conference on Reinforcement Learning and Decision Making, Montreal.*

Yamada Y*, Bhaukaurally K*, **Madarasz TJ,** Pouget A, Rodriguez I, Carleton A (2017)
Context- and output layer-dependent long-term ensemble plasticity in a sensory circuit.
***Neuron**, Volume 93 , Issue 5 , 1198 - 1212.*

Madarasz TJ, Diaz-Mataix L, Akhand O, Ycu EA, LeDoux, JE, Johansen JP (2016)
Evaluation of ambiguous associations in the amygdala by learning the structure of the environment. ***Nature Neuroscience** 19, 965–972.*

Madarasz TJ, LeDoux JE, Johansen JP (2015) Evaluating predictive variables by a dual system of structure and parameter learning. **RLDM**, *Multidisciplinary Conference on Reinforcement Learning and Decision Making, Edmonton.*

Conference Presentations

Madarasz, TJ, Behrens TEJ (2019) Flickering hope? Inferred hippocampal maps and splitter cells support multi-task learning COSYNE: *Computational and Systems Neuroscience.*

Fink AE, **Madarasz TJ**, LeDoux JE (2015) Short-term plasticity as a homeostatic mechanism in the lateral amygdala. *Society for Neuroscience.*

Madarasz TJ, Diaz-Mataix L, Akhand O, LeDoux JE, Johansen JP (2015) Evaluating ambiguous associations in the amygdala by learning the structure of the environment. COSYNE: *Computational and Systems Neuroscience, Salt Lake City, Utah.*

Madarasz TJ, Johansen JP, LeDoux JE (2013) Causality and its neural underpinnings in active and passive aversive learning. *Society for Neuroscience.*

Madarasz TJ, Diaz-Mataix L, Boyden SE, LeDoux JE, Johansen JP (2012) Temporally specific optogenetic inactivation of lateral amygdala pyramidal neurons reverses the effects of contingency degradation on fear learning. *Society for Neuroscience.*

Madarasz TJ, Roy SS, Boyden ES, LeDoux JE, Johansen JP (2011) Making predictions in a complex world: mechanisms of contingency degradation in fear conditioning. *Society for Neuroscience.*

Gervan P, Berencsi A, **Madarasz TJ,** Kovacs I (2010) Development and plasticity of primary visual and motor function in humans. *II. Dubrovnik Conference on Cognitive Science.*

Reviewing

Ad-hoc reviewer: Science, Nature Neuroscience, Biological Cybernetics, IBM Journal of Research and Development

Teaching

Computational and Cognitive Neuroscience Summer School, (2017), Shanghai.
Mathematical Tools for Cognitive and Neural Science (Graduate, Fall 2013), NYU-TA.
Cellular and Molecular Neuroscience (Fall 2012), NYU-TA.
Behavioral and Integrative Neuroscience (Spring 2012), NYU-TA.
Brain and Behavior (Spring 2011), NYU-TA.
Statistics, General Physics (2008-2009), Lecturer, McDaniel College, Budapest.

Mentorship

David Ireland, PhD Intern, MediaTek Research
Antonin Vidon, Intern, Huawei R&D UK
Frank Catuela, Undergraduate Researcher, NYU.
Omar Akhand, Undergraduate Researcher, NYU.
Samit Roy, Undergraduate Researcher, NYU.

Internships

2012, 2013 **RIKEN** Brain Science Institute

Programming Languages and Libraries

Python, Matlab, C++, Tensorflow, Pytorch, Theano