

# 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 GlaxoSmithKline
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

---

<b>PhD</b>	Center for Neural Science, New York University Advisors: Joseph E. LeDoux and Joshua P. Johansen.
<b>BA (Hons.)</b>	Mathematics, Trinity College, University of Cambridge.
<b>Diplôme Supérieur d'Enseignement</b>	Ecole Normale de Musique de Paris (Master's M2, Cello)
<b>Diplom</b>	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

---

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