

Francisco M. Garcia

Senior Machine Learning Scientist, Roku

E-Mail: fmaxgarcia@gmail.com

Education

Doctor of Philosophy

2015-2019

College of Information and Computer Sciences, University of Massachusetts Amherst

Advisor: Philip S. Thomas

Master of Science

2013-2015

College of Information and Computer Sciences, University of Massachusetts Amherst

Advisor: Sridhar Mahadevan

Bachelor of Science

2008-2011

Misher College of Arts and Sciences, University of the Sciences in Philadelphia

Experience

Roku

2022-Present

Senior Machine Learning Scientist

Research in machine learning for recommendations and ranking. Build and deploy models to be used in production.

Amazon Alexa

2019-2022

Applied Scientist – L5

Conduct research and implement solutions for the core natural language understanding system in Alexa.

University of Massachusetts Amherst

2015-2019

Doctoral Student

Conducted research in reinforcement learning with a focus on temporal abstraction and meta-learning.

Microsoft Research

2016

Research Intern

Conducted research in navigation of unmanned air vehicles (UAVs).

Adobe Research

2014

Research Intern

Conducted research in natural language techniques to support business analytics teams.

Publications

[NAACL 2021] F. G. Garcia, L. Chen, V. Kumar, H. Xie, J. Lu. Industry Scale Semi-Supervised learning for Natural Language Understanding. In *Proceedings of the 2021 Annual Conference of the North American Chapter of the Association for Computational Linguistics*.

[Ph.D. Dissertation 2020] F. G. Garcia. Improving Reinforcement Learning Techniques by Leveraging Prior Experience.

[NIPS 2019] F. M. Garcia, P. S. Thomas. A Meta-MDP Approach to Exploration for Lifelong Reinforcement Learning. In *Proceedings of the Thirty Third Conference on Neural Information Processing Systems*, December 2019.

[RLDM 2019] F. M. Garcia, C. Nota, P. S. Thomas. Learning Temporal Abstractions from Demonstration: A Probabilistic Approach to Offline Option Discovery. In *The Fourth Multidisciplinary Conference on Reinforcement Learning and Decision Making*, July 2019.

[AAMAS 2019] F. M. Garcia, B. C. da Silva, P. S. Thomas. A Compression-Inspired Framework for Macro Discovery. In *Proceedings of the Eighteenth International Conference on Autonomous Agents and Multiagent Systems*, May 2019. Extended Abstract

[CAVW 2014] K. Ninomiya, M. Kapadia, A. Shoulson, **F. M. Garcia**, N. I. Badler. Planning Approaches to Constraint-Aware Navigation in Dynamic Environments. In *Computer Animation and Virtual Worlds*, 2014.

[ICRA 2014] F. M. Garcia, M. Kapadia, N. I. Badler. GPU-Based Dynamic Search on Adaptive Resolution Grids. In *Proceedings of International Conference on Robotics and Automation*, June 2014

[MIG 2013] M. Kapadia, K. Ninomiya, A. Shoulson, **F. M. Garcia**, N. I. Badler. Constraint Aware Navigation in Dynamic Environments. In *Proceedings of the Sixth International Conference on Motion in Games*, 2013

[IROS 2013] M. Kapadia, **F. M. Garcia**, N. I. Badler. Dynamic Search on the GPU. In *Proceedings of the International Conference on Intelligent Robots and Systems*, 2013

[SCA 2013] M. Kapadia, A. Porres, **F. M. Garcia**, V. Reddy, N. Pelechano, N. I. Badler. Multi-Domain Real-Time Planning in Dynamic Environments. In *EUROGRAPHICS Symposium of Computer Animation*, 2013

[MIG 2011] A. Shoulson, **F. M. Garcia**, M. Jones, R. Mead, N. I. Badler. Parameterizing Behavior Trees. In *Proceedings of the Fourth International Conference on Motion in Games*, 2011

Workshops and Non-peer reviewed Publications

[Arxiv 2020] **F. M. Garcia**, C. Nota, P. S. Thomas. Learning Reusable Options for Multi-Task Reinforcement Learning. <https://arxiv.org/abs/2001.01577>

[AAAI 2019] **F. M. Garcia**, B. C. da Silva, P. S. Thomas. A Compression-Inspired Framework for Macro Discovery. In *Workshop on Reinforcement Learning in Games*, 2019.
Extended version: <https://arxiv.org/abs/1711.09048>

[AAAI 2019] **F. M. Garcia**, P. S. Thomas. A Meta-MDP Approach to Exploration for Lifelong Reinforcement Learning. In *Workshop on Reinforcement Learning in Games*, 2019.
Extended version: <https://arxiv.org/abs/1902.00843>

[Arxiv 2016] S. Giguere, **F. M. Garcia**, S. Mahadevan. A Manifold Approach to Learning Mutually Orthogonal Subspaces. <https://arxiv.org/abs/1703.02992>

Academic Service

I served as reviewer for:

- Association for the Advancement of Artificial Intelligence (AAAI): [2020-2023]
- International Conference on Machine Learning (ICML): [2019-2023]
- Advances in Neural Information Processing Systems (NIPS): [2020-2023]
- International Conference on Autonomous Agents and Multi-agent Systems (AAMAS): [2021]
- International Conference on Learning Representations (ICLR): [2021-2023]
- International Conference on Motions in Games (MIG): 2014
- International Conference on Intelligent Robots and Systems (IROS): 2015

References

Available upon request.

