Mikael Henaff

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AI Researcher

Research Areas

Reinforcement learning, exploration and open-endedness, embodied AI.

Education

2018	**Ph.D.** in Computer Science, New York University (advisor: Yann LeCun)
2011	**M.S.** in Mathematics, New York University
2008	**B.Sc.** in Mathematics, University of Texas at Austin

Employment History

2020–	**Research Scientist**, Meta (Fundamental AI Research)
2018–2020	**Postdoctoral Researcher**, Microsoft Research
2014-2017	**Research Intern**, Facebook AI Research (summers)
2011–2013	**Scientific Programmer**, New York University Medical Center

Publications

G Google Scholar

⋆ → Equal contribution

[J1] S. Arnaud, P. McVay, A. Martin, A. Majumdar, K. M. Jatavallabhula, P. Thomas, R. Partsey, D. Dugas, A. Gejji, A. Sax, V.-P. Berges, **M. Henaff**, A. Jain, A. Cao, I. Prasad, M. Kalakrishnan, M. Rabbat, N. Ballas, M. Assran, O. Maksymets, A. Rajeswaran, and F. Meier, "Locate 3D: Real-World Object Localization via Self-Supervised Learning in 3D," in *ICML*, 2025.

[J2] M. Klissarov, **M. Henaff**, S. Sodhani, R. Raileanu, P.-L. Bacon, P. Vincent, A. Zhang, D. Precup, M. Machado, and P. D'Oro, "MaestroMotif: Skill Design from Artificial Intelligence Feedback," in *ICLR*, Oral, 2025.

[J3] J. Yang, A. Sax, K. J. Liang, **M. Henaff**, H. Tang, A. Cao, J. Chai, F. Meier, and M. Feiszli, "Fast3R: Towards 3D Reconstruction of 1000+ Images in One Forward Pass," in *CVPR*, 2025.

[J4] Q. Zheng, **M. Henaff**, A. Zhang, A. Grover, and B. Amos, "Online Intrinsic Rewards for Decision-Making Agents from LLM Feedback," in *RLC*, 2025.

*Expected.

[J5] M. Klissarov, P. D'Oro, S. Sodhani, R. Raileanu, P.-L. Bacon, P. Vincent, A. Zhang, and **M. Henaff**, "Motif: Intrinsic Motivation from Artificial Intelligence Feedback," in *ICLR*, 2024.

[J6] A. Majumdar, A. Ajay, X. Zhang, P. Putta, S. Yenamandra, **M. Henaff**, S. Silwal, P. Mcvay, O. Maksymets, S. Arnaud, K. Yadav, Q. Li, B. Newman, M. Sharma, V. Berges, S. Zhang, P. Agrawal, Y. Bisk, D. Batra, M. Kalakrishnan, F. Meier, C. Paxton, S. Sax, and A. Rajeswaran, "OpenEQA: Embodied Question Answering in the Era of Foundation Models," in *CVPR*, 2024.

[J7] S. C. Raparthy, E. Hambro, R. Kirk, **M. Henaff**, and R. Raileanu, "Generalization to New Sequential Decision Making Tasks with In-Context Learning," in *ICML*, 2024.

[J8] **M. Henaff**, M. Jiang, and R. Raileanu, "A Study of Global and Episodic Bonuses for Exploration in Contextual MDPs," in *ICML*, Oral, 2023.

[J9] Q. Zheng, **M. Henaff**, B. Amos, and A. Grover, "Semi-Supervised Offline Reinforcement Learning with Action-Free Trajectories," in *ICML*, 2023.

[J10] **M. Henaff**, R. Raileanu, M. Jiang, and T. Rocktäschel, "Exploration via Elliptical Episodic Bonuses," in *NeurIPS*, 2022.

[J11] A. Agarwal, **M. Henaff**, S. Kakade, and W. Sun, "PC-PG: Policy Cover Directed Exploration for Provable Policy Gradient Learning," in *NeurIPS*, 2020.

[J12] K. Brantley, W. Sun, and **M. Henaff**, "Disagreement-Regularized Imitation Learning," in *ICLR*, Spotlight, 2020.

[J13] D. Misra, **M. Henaff**, A. Krishnamurthy, and J. Langford, "Kinematic State Abstraction and Provably Efficient Rich-Observation Reinforcement Learning," in *ICML*, Extended version, 2020.

[J14] **M. Henaff**, "Explicit Explore-Exploit Algorithms in Continuous State Spaces," in *NeurIPS*, 2019.

[J15] **M. Henaff**, A. Canziani, and Y. LeCun, "Model-Predictive Policy Learning with Uncertainty Regularization for Driving in Dense Traffic," in *ICLR*, 2019.

[J16] **M. Henaff**, J. Weston, A. Szlam, A. Bordes, and Y. LeCun, "Tracking the World State with Recurrent Entity Networks," in *ICLR*, 2017.

[J17] **M. Henaff**, A. Szlam, and Y. LeCun, "Recurrent Orthogonal Networks and Long-Memory Tasks," in *ICML*, 2016.

[J18] A. Choromanska, **M. Henaff**, M. Mathieu, G. B. Arous, and Y. LeCun, "The Loss Surface of Multilayer Networks," in *AISTATS*, 2015.

[J19] M. Mathieu, **M. Henaff**, and Y. LeCun, "Fast Training of Convolutional Networks through FFTs," in *ICLR*, 2014.

[J20] **M. Henaff**, K. Jarrett, K. Kavukcuoglu, and Y. LeCun, "Unsupervised Learning of Sparse Features for Scalable Audio Classification," in *ISMIR*, 2011.

Tools & Software

Languages: Python/Pytorch, Lua/LuaTorch, MATLAB, R, Bash.

Tools: Unix, Git, Slurm.

Invited Talks

2024 *Intrinsic Motivation from LLM Feedback*, NY Academy of Sciences
2022 *Exploration in Contextual MDPs*, University of Oxford, Whiteson Lab
2018 *Explicit Explore-Exploit Algorithms in Cont. State Spaces*, NY Academy of Sciences
2017 *Tracking the World State with Recurrent Entity Networks*, Cornell Tech
2017 *Tracking the World State with Recurrent Entity Networks*, University of Massachussetts

Teaching

New York University

2018 Teaching Assistant and Grader, Deep Learning

Advising

Interns and Residents

2025 Michael Matthews, Oxford University
2024 Jianing Yang, University of Michigan
2023 Martin Klissarov, McGill University
2022 Sharath Raparthy, McGill University
2022 Jonathan Chang, Cornell University

Academic Service

Area Chair

2025 ICLR

Reviewer

2016–2025 NeurIPS
2017–2025 ICML
2017–2025 ICLR
2016 AISTATS
2015 JMLR

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