Jorge Méndez-Méndez

Curriculum Vitae

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RESEARCH INTERESTS

My primary research interest is the creation of versatile, intelligent, embodied agents that learn to better interact with the world by accumulating knowledge over their lifetimes. I focus on the question of how these agents can leverage various forms of compositional and modular structures to transform the complex problem of modeling a lifelong data stream into simpler problems that can be more easily solved and whose solutions can be adapted, recombined, and reused in the future. My work mainly applies these methods to robotics, and also engages with related fields like computer vision and natural language.

ACADEMIC APPOINTMENTS

Stony Brook University

2024–Present *Assistant Professor* of Electrical and Computer Engineering

Massachusetts Institute of Technology

2022–2024 *Postdoctoral Fellow* with Leslie Pack Kaelbling and Tomás Lozano-Pérez

University of Pennsylvania

2022 *Postdoctoral Researcher* with Eric Eaton

2016–2022 *Research Assistant* with Eric Eaton

EDUCATION

May 2022 **Ph.D. in computer and information science**, *University of Pennsylvania*
Thesis: "Lifelong machine learning of functionally compositional structures."
Advisor: Eric Eaton. Committee: Dan Roth (chair), Pratik Chaudhari, Kostas Daniilidis, and George Konidaris (Brown University).

August 2018 **M.S.E. in robotics**, *University of Pennsylvania*
Advisor: Eric Eaton.

April 2016 **B.S. *summa cum laude* in electronics engineering (*Ingeniero electrónico*)**, *Universidad Simón Bolívar*, Venezuela
Thesis: "Implementation of algorithms and debugging for STMicroelectronics wearable platform" (*Desarrollo de algoritmos y depuración de la plataforma ponible de STMicroelectronics*).
[Awarded "Exceptionally Good" distinction]
Advisors: Daniele Caltabiano (STMicroelectronics), Giacomo Boracchi (Politecnico di Milano), Novel Certad (Universidad Simón Bolívar).

2014–2015 **Exchange graduate student in computer science**, *Politecnico di Milano*, Italy

HONORS AND AWARDS

2022–2024 MIT-IBM Distinguished Postdoctoral Fellowship

2021 3rd place award of the Two Sigma Diversity PhD Fellowship **($5,000)**

2020 **Best paper** award at the 4th Lifelong Learning Workshop at ICML for "Lifelong learning of factored policies via policy gradients"

2021, 2022 **Outstanding reviewer** or equivalent at ICLR, ICML, and NeurIPS

2016 Exceptionally Good Thesis award at Universidad Simón Bolívar for "Implementation of algorithms and debugging for STMicroelectronics wearable platform"

2015, 2016 Top 30 GPAs at Universidad Simón Bolívar among students in the final two years

2011 Top 10 GPAs at Universidad Simón Bolívar (3 / 750) among first-year students

2010 Top 50 entrance placement exams at Universidad Simón Bolívar (25 / 7409)

OTHER RESEARCH APPOINTMENTS

Facebook AI Research

Jun. 2021–Sep. 2021 *Research Intern* with Arthur Szlam and Ludovic Denoyer

Microsoft Research, Montréal

Jun. 2020–Sep. 2020 *Research Intern* with Harm van Seijen

Facebook AI Applied Research

May 2019–Aug. 2019 *Research Intern* with Alborz Geramifard and Mohammad Ghavamzadeh

PUBLICATIONS

[*]Equal contribution

Journal Articles

[J19] K. O'Brien, N. Ng, I. Puri, **J. Méndez-Méndez**, H. Palangi, Y. Kim, M. Ghassemi, and T. Hartvigsen. Improving black-box robustness with in-context rewriting. *Transactions on Machine Learning Research (TMLR)*, 2024.

[J18] B. Wang, **J. Méndez-Méndez**, C. Shui, F. Zhou, D. Wu, G. Xu, C. Gagné, and E. Eaton. Gap minimization for knowledge sharing and transfer. *Journal of Machine Learning Research (JMLR)*, 24(33):1–57, 2023.

[J17] **J. Méndez-Méndez** and E. Eaton. How to reuse and compose knowledge for a lifetime of tasks: A survey on continual learning and functional composition. *Transactions on Machine Learning Research (TMLR)*, 2023. [survey certification]

[J16] M. M. Baker, A. New, M. Aguilar-Simon, Z. Al-Halah, S. M. R. Arnold, E. Ben-Iwhiwhu, A. P. Brna, E. Brooks, R. C. Brown, Z. Daniels, A. Daram, F. Delattre, R. Dellana, E. Eaton, H. Fu, K. Grauman, J. Hostetler, S. Iqbal, C. Kent, N. Ketz, S. Kolouri, G. Konidaris, D. Kudithipudi, E. Learned-Miller, S. Lee, M. L. Littman, S. Madireddy, **J. Méndez-Méndez**, E. Q. Nguyen, C. D. Piatko, P. K. Pilly, A. Raghavan, A. Rahman, S. K. Ramakrishnan, N. Ratzlaff, A. Soltoggio, P. Stone, I. Sur, Z. Tang, S. Tiwari, K. Vedder, F. Wang, Z. Xu, A. Yanguas-Gil, H. Yedidsion, S. Yu, and G. K. Vallabha. A domain-agnostic approach for characterization of lifelong learning systems. *Neural Networks*, 160:274–296, 2023.

Conference Papers

[C15] M. Hussing[*], **J. Méndez-Méndez**[*], A. Singrodia, C. Kent, and E. Eaton. Robotic manipulation datasets for offline compositional reinforcement learning. In *Proceedings of the First Reinforcement Learning Conference*, 2024.

[C14] **J. Méndez-Méndez**, L. P. Kaelbling, and T. Lozano-Pérez. Embodied lifelong learning for task and motion planning. In *Proceedings of the 7th Conference on Robot Learning (CoRL-23)*, 2023.

[C13] **J. Méndez-Méndez**[*], M. Hussing[*], M. Gummadi, and E. Eaton. CompoSuite: A compositional reinforcement learning benchmark. In *Proceedings of the 1st Conference on Lifelong Learning Agents (CoLLAs-22)*, 2022.

[C12] **J. Méndez-Méndez**, H. van Seijen, and E. Eaton. Modular lifelong reinforcement learning via neural composition. In *10th International Conference on Learning Representations (ICLR-22)*, 2022. [acceptance rate: 32%]

[C11] M. Gummadi, C. Kent, **J. Méndez-Méndez**, and E. Eaton. SHELS: Exclusive feature sets for novelty detection and continual learning without class boundaries. In *Proceedings of the 1st Conference on Lifelong Learning Agents (CoLLAs-22)*, 2022.

[C10] **J. Méndez-Méndez** and E. Eaton. Lifelong learning of compositional structures. In *9th International Conference on Learning Representations (ICLR-21)*, 2021. [acceptance rate: 29%; invited talk at ContinualAI October Online Meetup]

[C9] **J. Méndez-Méndez**, B. Wang, and E. Eaton. Lifelong policy gradient learning of factored policies for faster training without forgetting. In *Advances in Neural Information Processing Systems 33 (NeurIPS-20)*, 2020. [acceptance rate: 20%]

[C8] B. Wang, **J. Méndez-Méndez**, M. Cai, and E. Eaton. Transfer learning via minimizing the performance gap between domains. In *Advances in Neural Information Processing Systems 32 (NeurIPS)*, 2019. [acceptance rate: 21%]

[C7] **J. Méndez-Méndez**, S. Shivkumar, and E. Eaton. Lifelong inverse reinforcement learning. In *Advances in Neural Information Processing Systems 31 (NeurIPS-18)*, 2018. [acceptance rate: 21%]

Workshop Papers

[W6] A. Ejilemele and **J. Méndez-Méndez**. Continual improvement of threshold-based novelty detection. In *CoLLAs-23 Workshop Track*, 2023.

[W5] M. Hussing*, **J. Méndez-Méndez***, C. Kent, and E. Eaton. Robotic manipulation datasets for offline compositional reinforcement learning. In *CoRL 2022 Workshop on Pre-training Robot Learning*, 2022. [contributed spotlight talk]

[W4] **J. Méndez-Méndez** and E. Eaton. Lifelong learning of factored policies via policy gradients. In *4th Lifelong Learning Workshop at the International Conference on Machine Learning (LML-ICML-20)*, 2020. [**best paper award**; contributed talk—oral acceptance rate: 10%]

[W3] **J. Méndez-Méndez** and E. Eaton. A general framework for continual learning of compositional structures. In *Continual Learning Wokrshop at the International Conference on Machine Learning (CL-ICML-20)*, 2020.

[W2] **J. Méndez-Méndez**, A. Geramifard, M. Ghavamzadeh, and B. Liu. Reinforcement learning of multi-domain dialog policies via action embeddings. In *3rd Conversational AI Workshop at Neural Information Processing Systems (ConvAI-NeurIPS)*, 2019. [contributed talk—oral acceptance rate: 16%]

Theses

[T1] **J. Méndez-Méndez**. *Lifelong machine learning of functionally compositional structures.* Ph.D. thesis, University of Pennsylvania, 2022.

TEACHING

Stony Brook University

Fall-24 *Instructor* for ESE 577 Deep Learning Algorithms and Software

University of Pennsylvania

Fall-19, Spring-20 *Instructor* for CIS 192 Python Programming

Fall-17 *Head Teaching Assistant* for CIS 419/519 Introduction to Machine Learning

Universidad Simón Bolívar

Fall-13,14, Winter-13,14,16, Spring-13,14 *Teaching Assistant* for CI 2125 Programming I

Spring-12 *Teaching Assistant* for EC 2272 Electric Circuit Analysis II

Winter-12 *Teaching Assistant* for MA 1112 Calculus II

Fall-11 *Teaching Assistant* for MA 1111 Calculus I

INVITED TALKS

February 2024 **Continual Causality Bridge at AAAI**, *Causal Models for Lifelong Robot Learning and Where to Find Them (position talk)*

October 2023 **Computer Science Seminar at Rutgers University**, *Unlocking Lifelong Robot Learning With Modularity*

October 2023 **Forum for Artificial Intelligence at UT Austin**, *Unlocking Lifelong Robot Learning With Modularity*

October 2023 **Machine Learning and Friends Lunch at UMass Amherst**, *Unlocking Lifelong Robot Learning With Modularity*

October 2022 **Lifelong Robotics Workshop at IROS**, *Lifelong Robot Learning via Functional Compositionality*

February 2022 **University of Western Ontario**, *Creating Versatile Learning Agents Via Lifelong Compositionality*

February 2022 **Toyota Research Institute**, *Creating Versatile Learning Agents Via Lifelong Compositionality*

October 2020 **Continual AI Online Meetup**, *Lifelong Learning of Compositional Sructures*

RESEARCH MENTORING

Ph.D. Students

2019–2022 Meghna Gummadi, Penn CIS: novelty detection and compensation (CoLLAs paper)

2021–2022 Marcel Hussing, Penn CIS: compositional reinforcement learning (CoLLAs paper)

Master's Students

2016–2018 Shashank Shivkumar, Penn ROBO: lifelong learning from demonstration (Master's thesis, NeurIPS paper). Next: Advanced AI Engineer, Honeywell

2017–2018 Varun Gupta, Penn ROBO: lifelong reinforcement learning. Next: Perception Engineer, Rivian

2019 Srinath Rajagopalan, Penn CIS: lifelong reinforcement learning. Next: Software Engineer, Amazon Robotics

2020–2021 Wenxuan Zhang, Penn AMCS: lifelong non-stationary learning (Master's thesis). Next: Ph.D. student at King Abdullah University of Science and Technology

2023–2024 Quincy Johnson, MIT EECS: learning for task and motion planning

Undergraduate Students

2017 Monica Vyavahare, Penn CIS: lifelong learning from demonstration. Next: Software Engineer, Amazon Robotics

2021 Spencer Solit, Penn CIS: compositional reinforcement learning

2022–2023 Parul Singh, MIT EECS (SuperUROP): compositional off-line reinforcement learning

2022–2024 Abe Ejilemele, MIT EECS: task-free lifelong learning

2023–2024 Bartłomiej Cieślar, Imperial College London CS; MIT EECS (SuperUROP): learning for task and motion planning

PROFESSIONAL SERVICE

Affinity Event Organization

2022 Finance and Sponsorship Co-Chair for LatinX in AI Workshop at NeurIPS

Journal Article Reviewing

2023 IJRR, International Journal of Robotics Research

Conference Paper Reviewing

2020, 2021†, 2022, 2024 NeurIPS, Conference on Neural Information Processing Systems

2023, 2024 NeurIPS Datasets and Benchmarks Track

2024 CoRL, Conference on Robot Learning

2024 RLC, Reinforcement Learning Conference

2021†, 2022†, 2023, 2024 ICLR, International Conference on Learning Representations

2021† ICML, International Conference on Machine Learning

2020, 2021, 2023 ICRA / RA-L, International Conference on Robotics and Automation

†Outstanding reviewer or equivalent

Conference Paper Co-reviewing

2019 AAAI, Conference on Artificial Intelligence

2017–2019 IJCAI, International Joint Conference on Artificial Intelligence

2018 ICML, International Conference on Machine Learning

2018 NeurIPS, Neural Information Processing Systems

Workshop Proposal Reviewing

2021 AAAI, Conference on Artificial Intelligence

Workshop Paper Reviewing

2022 InterNLP Workshop at NeurIPS

OTHER APPOINTMENTS

Capital One

May 2017–Aug. 2017 *Data Science Intern*, Credit Card Data Science Division

STMicroelectronics

Feb. 2015–Jul. 2015 *Research & Development Intern*, Advanced Systems Technology Group