Patrick Emami

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Summary

- Machine learning PhD student with expertise in deep learning, computer vision, and data science applying for a Summer 2021 internship
- Passionate about interdisciplinary machine learning projects with positive social impact, proven by 4+ years experience collaborating with transportation and cybersecurity experts
- Recently named the 2020 Student of the Year for the US-DOT southeastern university transportation center (out of approx. 10 universities)

Education

† *Indicates expected*

2016–Dec. 2021 †	**University of Florida**, Gainesville, FL Ph.D., Computer Science Relevant coursework: Bioinformatics, Advanced Data Science, Machine Learning	Advisor: Dr. Sanjay Ranka
2012–2016	**University of Florida**, Gainesville, FL B.Sc., Computer Engineering	Cum Laude, GPA: 3.74/4.0

Experience

2018–present **UF MALT Lab**, Graduate Research Assistant

- Formulate, analyze, and publish novel object-centric generative models for image and video representation learning and generation

2016–present **UF Transportation Institute**, Graduate Research Assistant

- Collaborate as software and sensing research team leader with transportation scientists, engineers, and industry partners to design an NSF-funded framework for traffic signal optimization with connected and autonomous vehicles
- Innovate and deploy a deep-learning-based video-radar multi-object tracking algorithm for traffic intersections ($4.5\times$ video tracking speed-up at the edge)

Summer 2015 **Amazon.com, Inc.**, Software Development Engineering Intern

- Developed an OpenCV computer vision library for scanning PDF417 barcodes
- Integrated it into the driver registration pipeline for the Java-based Prime Now mobile app

2013-2015 **Center for Intelligent Machines and Robotics**,
Undergraduate Research Assistant

- Developed an open-source reinforcement learning framework for exploring Partially Observable Markov Decision Processes

Technical Skills

- Scientific programming languages: Python, MATLAB
- ML frameworks: PyTorch, Tensorflow, scikit-learn, OpenCV
- Data analysis: Jupyter, Pandas, numpy, matplotlib/seaborn, Inkscape
- General purpose languages and scripting: Java, C++, Bash

Select Honors and Awards

2020	Student of the Year US-DOT STRIDE Center (10 universities) ($1,000)
2016–present	Florida McKnight Doctoral Fellowship ($65,000 over 5 years)
2016–present	CISE Department Graduate Research Fellowship ($150,000 over 5 years)
2015–2016	Northrop Grumman Engineering Scholarship ($1,000)
2014–2015	University Scholars Program Research Grant ($1,750)
2014	IROS'14 Best Entertainment Robots and Systems Paper Finalist

Select Publications

Peer-Reviewed Conferences and Workshops

[1] **Emami, P.**, He, P., Rangarajan, A., Ranka, S. A Symmetric and Object-Centric World Model for Stochastic Environments. 34th Conference on Neural Information Processing Systems Workshop on Object Representations for Learning and Reasoning. 2020. ***Accepted as Spotlight***.

[2] **Emami, P.***, Vargas, L.*, Traynor, P. On the Detection of Disinformation Campaign Activity with Network Analysis. CCSW 2020: The ACM Cloud Computing Security Workshop. 2020. **Equal contribution*

[3] **Emami, P**., Pourmehrab, M., Martin-Gasulla, M., Ranka, S., Elefteriadou, L. A Comparison of Intelligent Signalized Intersection Controllers Under Mixed Traffic. IEEE Intelligent Transportation Systems Conference, 2018.

Peer-Reviewed Journals

[1] **Emami, P.**, & Elefteriadou, L., & Ranka, S. Long-range Tracking of Vehicles at Traffic Intersections Without a GPU. IEEE Transactions on Intelligent Transportation Systems. 2020. *Submitted*.

[2] **Emami, P.**, & Panos M. P., & Elefteriadou, L., & Ranka, S. Machine Learning Methods for Data Association in Multi-Object Tracking. ACM Computing Surveys, 53, 4, Article 69. 2020.

[3] Pourmehrab, M., **Emami, P.**, Martin-Gasulla, M., Wilson, J., Elefteriadou, L., Ranka, S. Signalized Intersection Performance with Automated and Conventional Vehicles: A Comparative Study. Journal of Transportation Engineering, Part A: Systems 146.9. 2020.

Preprints

[1] **Emami, P.**, & Ranka, S. Learning Permutations with Sinkhorn Policy Gradient. arXiv:1805.07010 [cs.LG], 2018.

Blog Posts

[1] **Emami, P**. Deep Deterministic Policy Gradients in Tensorflow. http://pemami4911.github.io/blog/2016/08/21/ddpg-rl.html. 2016. > 100K unique views (Google Analytics).