

# Mark Mazumder

203-428-7414 | markmazumder@g.harvard.edu | <https://markmaz.com>

## Research Objective

---

My research interests involve efficient machine learning strategies for low resource problems where limited training data is available, including few-shot keyword-spotting, object detection, and resilient visual navigation.

## Education

---

- o **Harvard University**, Cambridge, MA. *PhD Candidate in Electrical Engineering*. Fall 2020-Present  
Advisor: Professor Vijay Janapa Reddi, Edge Computing Lab [\[link\]](#) GPA: 4.0
- o **Harvard University**, Cambridge, MA. *Bachelor of Arts in Computer Science*. 2009

## Selected Publications

---

- o *Multilingual Spoken Words Corpus*. **M. Mazumder**, S. Chitlangia, C. Banbury, Y. Kang, J. Ciro, K. Achorn, D. Galvez, M. Sabini, P. Mattson, D. Kanter, G. Diamos, P. Warden, J. Meyer, V. Janapa Reddi. NeurIPS 2021 Track on Datasets and Benchmarks. [\[NeurIPS Proceedings\]](#) [\[Harvard News\]](#) [\[Dataset Download\]](#)
- o *Few-shot Keyword Spotting in Any Language*. **M. Mazumder**, C. Banbury, J. Meyer, P. Warden, V. Janapa Reddi. INTERSPEECH 2021. [\[arXiv:2104.01454\]](#)
- o *Towards an Autonomous Aerial Survey and Planning System for Humanitarian Aid and Disaster Response*. R. Allen, **M. Mazumder**. IEEE Aerospace Conference 2020. [\[doi:10.1109/AERO47225.2020.9172766\]](#)
- o *Active Rendezvous for Multi-Robot Pose Graph Optimization using Sensing over Wi-Fi*. W. Wang, N. Jadhav, P. Vohs, N. Hughes, **M. Mazumder**, S. Gil. International Symposium on Robotics Research (ISRR) 2019. [\[arXiv:1907.05538\]](#)
- o *Guaranteeing Spoof-Resilient Multi-Robot Networks*. S. Gil, S. Kumar, **M. Mazumder**, D. Katabi, D. Rus. Autonomous Robots 2017. [\[Journal Article\]](#) [\[MIT News\]](#) (subsumes our [RSS 2015 paper](#))

## Work Experience

---

**Apple**, Seattle WA Summer 2022  
AI/ML Intern, *Machine Intelligence Sensing Technologies*  
Researching novel learning strategies for improving classification and forecasting accuracy on multimodal time-series data.

**Landing AI**, Palo Alto CA Summer 2021  
Intern, *Continuous Learning Team*  
Developed and prototyped novel anomaly detection methods for visual inspection.

- o Collaborated cross-functionally to distill high-level customer needs into concrete engineering requirements
- o Leveraged data-centric ML and error analysis to systematically innovate and improve model
- o Kick-started integration and deployment of anomaly detection models into customer-facing product features

**MIT Lincoln Laboratory**, Lexington MA 2012-2020  
Associate Staff, *Group 104: Artificial Intelligence Software Architecture and Algorithms*.

- o Served as co-PI on two autonomous navigation research efforts:
  - *Transferring Multi-Robot Learning through Virtual and Augmented Reality for Rapid Disaster Response*. Deploying Sim2Real visual navigation reinforcement learning policies without domain randomization.
  - *Resilient Perception in Degraded Environments*. Multi-agent mapping utilizing outlier-robust pose graph optimization and the physics of wireless signals for efficient coordination.
- o Prior engineering roles include SmallSat flight software development, test and evaluation engineering for a DARPA program, and high-scale network traffic generation.

**Languages:** Python, Haskell, C++, C, Scala, JavaScript, Java. **Technologies:** TensorFlow, PyTorch, Pandas, Scikit-Learn, GTSAM, AWS, Docker, Flask, ZeroMQ.

## Workshop Activities

---

- *Co-organizer*, DataPerf Workshop. ICML 2022. [[link](#)].
- *Co-organizer*, Data-Centric AI Workshop. NeurIPS 2021. [[link](#)].
- *Invited Talk* 1000 Words in 1000 Languages. MLPerf-Bench, HPCA 2021 [[link](#)].
- *Co-organizer*, Perception, Action, Learning: From Metric-Semantic Scene Understanding to High-Level Task Execution. IEEE International Conference on Robotics and Automation (ICRA) 2020. [[link](#)]
- *Tutorial* Safe Client/Server Web Development with Haskell. Mark Mazumder, Tim Braje. IEEE SecDev 2016.

## Teaching Activities

---

- *Contributor*, **Applications of TinyML, EdX** [[edx.org](#)], Prof. Vijay Janapa Reddi Fall 2020
- *Instructor*, **MIT 6.A01 Autonomous Racecar Robotics Seminar**, Prof. Sertac Karaman Fall 2019  
Website: [https://markmaz.com/racecar\\_fall19/](https://markmaz.com/racecar_fall19/)
- *Instructor*, **MIT Beaver Works Summer Institute: Autonomous Air Vehicle Racing** 2018-2019  
Website: <https://bws-i-uav.github.io/website/index.html>
- *Instructor*, **MIT NEET-AM Machine Learning Labs**, Prof. Sertac Karaman Spring 2019  
News: <https://blogs.nvidia.com/blog/2019/11/21/mit-quadro-data-science-workstations/>
- *Instructor*, **MIT 6.S184/16.S685 RACECAR**, Independent Activities Period January 2019
- *Instructor*, **MIT 16.S688 Autonomous Machines Seminar**, Prof. Sertac Karaman Fall 2018
- *Lab Assistant*, **MIT 16.30/16.31 Feedback Control Systems**, Prof. Sertac Karaman Fall 2018
- *Instructor*, **MIT 6.A01 Autonomous Racecar Robotics Seminar**, Prof. Sertac Karaman Fall 2017
- *Lab Assistant*, **MIT 6.829 Computer Networks**, Prof. Dina Katabi Fall 2015
- *Teaching Fellow*, **Harvard University CS161: Operating Systems**, Prof. Margo Seltzer Spring 2011