

# Litian Liu

Senior Engineer  
Qualcomm AI Research  
Qualcomm

San Diego, CA 92123  
Tel: (410)967-9590  
Email: litianliuphd@gmail.com

## RESEARCH INTEREST

My research focuses on the safe and reliable deployment of machine learning. I study uncertainty in neural networks for applications in out-of-distribution detection, hallucination mitigation in LLM and VLM, and safety-critical domains such as autonomous driving. Broadly, I aim to develop principled and efficient methods that improve the trustworthiness of modern AI models.

## EDUCATION

**Massachusetts Institute of Technology** Cambridge, MA 2017.08 - 2021.05  
Ph.D. in Computer Science and Computer Science (GPA: 5.0/5.0)  
Advisor: Muriel Médard

**Princeton University** Princeton, NJ 2016.08 - 2017.08  
M.Eng. in Electrical and Computer Engineering (GPA: 3.8/4.0)  
Advisor: Mung Chiang

**The Chinese University of Hong Kong** Hong Kong 2012.08 - 2016.05  
B.Eng in Information Engineering (GPA: 3.75/4.0)

## EXPERIENCE

**Qualcomm AI Research** 2021.07 - Present  
Senior Engineer

**Electronic Arts** 2019.05 - 2019.08  
Research Intern  
Mentor: Ahmad Beirami

## PUBLICATIONS

- **L. Liu**, R. Pourreza, S. Panchal, A. Bhattacharyya, Y. Qin, R. Memisevic “Enhancing Hallucination Detection through Noise Injection”. Under Review.
- R. Yasarla, S. Han, H. Cheng, **L. Liu**, S. Mahajan, A. Bhattacharyya, R. Garrepalli, H. Cai, F. Porikli “RoCA: Robust Cross-Domain End-to-End Autonomous Driving”. Under Review.
- A. Bhattacharyya, B. Xu, S. Haresh, R. Pourreza, **L. Liu**, S. Panchal, L. Sigal, Roland Memisevic. “Can Multi-Modal LLMs Provide Live Step-by-Step Task Guidance?”. Neurips 2025
- **L. Liu**, Y. Qin “Detecting Out-of-Distribution through the Lens of Neural Collapse”. CVPR 2025.
- D. Hegde\*, R. Yasarla\*, H. Cai, S. Han, A. Bhattacharyya, S. Mahajan, **L. Liu**, R. Garrepalli, V.M. Patel, F. Porikli “Distilling Multi-modal Large Language Models for Autonomous Driving”. CVPR 2025.
- A.E. Nabi, P. Pouladvand, **L. Liu**, Y. Hua, C. Ayubcha “Machine Learning in Drug Development for Neurological Diseases: A Review of Blood Brain Barrier Permeability Prediction Models” . Molecular Informatics, 44(3), p.e202400325. 2025
- **L. Liu**, Y. Qin “Fast Decision Boundary based Out-of-Distribution Detector”. ICML 2024.
- C. Ayubcha, S. Singhc, K. Pateld, A. Rahmime, J. Hasanc, **L. Liu**, T. Werner, A. Alavic, “Machine learning in the positron emission tomography imaging of Alzheimer’s disease”, Nuclear Medicine Communications, 44(9), pp.751-766. 2023.
- **L. Liu**, A. Solomon, S. Salamatian, D. Malak, M. Médard, “Neural Network Coding” in “Machine Learning and Wireless Communications” , Cambridge University Press, 2022.

- L. D'Alessio\*, **L. Liu\***, K. Duffy, Y. Eldar, M. Médard, M. Babadi, "A Coding Theory Perspective on Multiplexed Molecular Profiling of Biological Tissues", 2020 International Symposium on Information Theory and Its Applications (ISITA) , Virtual, Oct. 2020.
- **L. Liu**, A. Salomon, S. Salamatian, M. Médard, "Neural Network Coding", 2020 IEEE International Conference on Communications (ICC), Virtual Conference, June 2020.
- **L. Liu**, D. Malak, and M. Medard, "Guesswork for Inference in Machine Translation with Seq2seq Model", 2019 IEEE Information Theory Workshop (ITW), Gotland, Swenden, Aug. 2019.
- S. Salamatian, **L. Liu**, A. Beirami, and M. Medard, "Mismatched Guesswork and One-to-One Codes", 2019 IEEE Information Theory Workshop (ITW), Gotland, Swenden, Aug. 2019.

## PROGRAMMING SKILLS

**Languages:** C++, Python, Matlab, CUDA

**Deep Learning Frameworks:** PyTorch, TensorFlow.

**Generative AI:** LLMs, VLMs (Vision-Language Models), Streaming Models, Diffusion Models

**3D Graphics & Rendering:** Gaussian Splatting

## SERVICES

Reviewer of TPAMI, Neurips, ICLR, ICCV, CVPR, JSAIT, ISIT, ITW.

## AWARDS

Qualcomm Impact Award, 2023, Qualcomm.

Irwin Mark Jacobs and Joan Klein Jacobs Presidential Fellowship, MIT.

Princeton University Graduate School Dean's Grant, Princeton.

The Charles Kao Top Performance Awards 2015-16, CUHK