# Amir Esmaeilpourmoghaddam

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## Experience

**Ph.D. Research Assistant**, University of Illinois Chicago, Chicago, Illinois — Fall 2023-Current
- Working on Generative and Multi-Modal Models

**Machine Learning Intern**, Technical University Of Munich — Summer 2021
Supervised by Prof. Dr. Matthias Althoff
- Motion planning using Reinforcement Learning for self-driving cars

**Teaching assistant** — 2019-2024
- Spring 2024, TA and grader for CS 141 Program Design II by Dr. Pedram Rooshenas
- Fall 2020, TA and grader for Signal And Systems by Dr. Fatemeh Rezaei
- Fall 2019,TA and grader for Hardware Software Co-design by Dr. H. Roodaki

## Research Interests

**Machine Learning**
**Computer Vision and NLP**
**Signal and Image Processing**

## Education

**Ph.D. Computer Science** , University of Illinois Chicago, Chicago, Illinois — Expected 2028

**B.S. Computer Engineering**, K. N. Toosi University of Technology, Tehran, Iran — 2022
Thesis: Windshield Reflection Removal under the supervision of Dr. Behrooz Nasihatkon.

## Programming Languages

**Python, Java, C, C++, Matlab, Octave, SQL, Assembly**

## Ph.D. Research

**Spiking Multi-Modal Models** (Under supervision of Prof. Pedram Rooshenas):
- My research expertise is focused on the convergence of spiking neural networks and multi-modal generative and discriminative models. While the complete details remain confidential due to ongoing research, I can confidently affirm my proficiency in these innovative and cutting-edge fields.

## Selected AI Courses and Certificates

- Fall 2023, UIC CS 412, Introduction to Machine Learning by Prof. Pedram Rooshenas
- Summer 2020, MIT RES.6-012, Introduction to Probability by Prof. John Tsitsiklis
- Summer 2020, MIT 18.06, Linear Algebra by Prof. Gilbert Strang
- Spring 2020, Stanford CS231n, Convolutional Neural Networks for Visual Recognition by Prof. Fei-Fei Li
- Spring 2020, Neural Networks and Deep Learning by Prof. Andrew Ng
- Spring 2020, Improving Deep Neural Networks: Hyperparameter tuning, Regularization and Optimization by Prof. Andrew Ng
- Spring 2020, Structuring Machine Learning Projects by Prof. Andrew Ng
- Fall 2019, MIT 6.003, signals and systems by Prof. Dennis Freeman
- Fall 2019,Georgia Tech, Introduction to Computer Vision by Prof. Aaron Bobick
- Summer 2019,Intro to TensorFlow for Deep Learning by AWS
- Summer 2019,Stanford, Machine Learning by Prof. Andrew Ng

## Selected Course Projects

- **FAll 2023, Introduction to machine learning by Dr. Pedram Rooshenas:**
  - Spiking Neural Network classifier (MNIST dataset).
  - I build a attention based (transformers) language model from scratch that was able to classify citations.
- **Personal Projects:**
  - Edge Motion Detection by Discrete Markov Random Fields and Belief Propagation.

- **Spring 2021, Fundamentals of Computer Vision by Dr. Behrooz Nasihatkon:**
  - Final Project: producing BEV (bird's eye view) perspective of a soccer match live stream. (PyTorch, OpenCV)
- **Fall 2020, System Analysis and Design by Dr. Mehdi Esnaashari:**
  - Recommender System for an art website (combination of content base, collaborative filtering, and latent space model) (PyTorch)
- **Spring 2020, Stanford cs231n by Prof. Fei-Fei Li:**
  - LSTMs For Image captioning COCO data set (PyTorch)
  - Standard GAN, DC-GAN, LS-GAN to generate Images close to MNIST data. (PyTorch)
- **Spring 2020, Neural Networks and Deep Learning by Prof. Andrew Ng:**
  Selected Projects:
  - Deep Neural Network for Image Classification (python)
  - Logistic Regression for cat recognition (python)
- **Spring 2020, Improving Deep Neural Networks: Hyperparameter tuning, Regularization and Optimization by Prof. Andrew Ng:**
  - leveling up network accuracy by different tricks: initialization i.e. Xavier, ... reguralization i.e. drop out, batch normalization,... (python)

## AWARDS

Ranked 180th among more than 30,000 applicants in the nationwide university entrance 2017