

# Long Le

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## Education

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### University of Massachusetts Amherst

Amherst, MA

Dual Bachelor of Science, Computer Science and Statistic. GPA: 3.958 / 4.0

Sep. 2018 – Dec. 2021

- o **Graduate Coursework:** 14 graduate-level classes. Selected courses:
  - **Computer Science:** Randomized Algorithms, Neural Dynamics, Stochastic Simulation.
  - **Math:** Convex Optimization, Numerical Methods.
  - **Statistics:** Stochastic Calculus, Stochastic Process, Measure-theoretic Probability.
- o **Academic Honors:**
  - Chancellor's Scholarship: highest merit-based award for out-of-state students at UMass.
  - Sheila Flynn Research Scholarship: Summer 2019 research funding from UMass Mathematics Department.

## Technical Skills

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### Research Areas

AI, Machine Learning, Reinforcement Learning.

### Programming Languages

Python, C++/C, SQL, Java, MATLAB, R.

## Publications & Preprints

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- [1] Huao Li, **Long Le**, Max Chis, Keyang Zheng, Dana Hughes, Michael Lewis, and Katia Sycara. Sequential theory of mind modeling in team search and rescue tasks. *AAAI Fall Symposium on Computational Theory of Mind for Human-Machine Teams*, 2021. [[link](#)].
- [2] **Long Le** and Yao Li. Supervised neuronal parameter estimation from spiking trains. *In submission to Frontiers in Computational Neuroscience*, 2021. [[link](#)].
- [3] **Long Le**, Dana Hughes, and Katia Sycara. Multi-agent hierarchical reinforcement learning in urban search and rescue. *Robotics Institute Summer Scholar's Journal*, 2021. [[link](#)].
- [4] **Long Le**, Vignesh Viswanathan, and Yair Zick. Fairness and dynamics in coalition formation with imperfect information. *Working paper*, 2021.

## Industry Experience

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### Google

Mountain View, CA

Software Engineer

Feb. 2022 –

- o Will be working on Machine Learning (ML) for Ads.

### Facebook

Menlo Park, CA

Software Engineer Intern

Jun. 2020 – Sep. 2020

- o Worked with the Ads Supply Optimization Team of Instagram to build new ML models for contextual ad load, prescribing the amount of ads shown to users based on contextual signals.
- o With novel ad hypotheses, our models significantly outperformed the existing ones in terms of revenue-user-sentiment trade-off (around 3x improvement) and other metrics.

## Research Experience

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### Carnegie Mellon University - Robotics Institute

Pittsburgh, PA

Research Intern

March 2021 – Present

- o Working with Prof. [Katia Sycara](#), Prof. [Michael Lewis](#) and Dr. [Dana Hughes](#) on [Artificial Social Intelligence](#).
- o Trained AI teams for search-and-rescue missions using Multi-agent Hierarchical Reinforcement Learning. [[video](#)], paper [[3](#)].
- o Helped develop dynamic machine Theory of Mind inference with human baseline. (paper [[1](#)])
- o Built a team coordination LSTM predictor from communication signals, and an intervention model to correct false belief and synchronize team mental model.
- o Part of the [Robotics Institute Summer Scholar Program \(RISS\)](#).

### University of Massachusetts Amherst

Amherst, MA

Research Assistant

Sep. 2018 – Present

- **Game Theory:** with Prof. [Yair Zick](#) on the strategic behavior and fairness of negotiation games under uncertainty (paper [4]) (Fall 2020 - present).
- **Computational Neuroscience:** with Prof. [Yao Li](#) on applying deep learning for parameter estimation in neuronal models (paper [2]) (Spring 2019 - Fall 2020). Funded REU research during Summer 2019.
- **ML Psychometrics:** with Prof. [John Lalor](#) (then PhD student) on modeling ML learners using Item Response Theory (Fall 2018).

## Teaching Experience

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**University of Massachusetts Amherst**

**Amherst, MA**

*Teaching Assistant*

*Jan. 2019 - Present*

- **Computer Science:**
  - CS 490A: Natural Language Processing (Fall 2021)
  - CS 370: Computer Vision (Spring 2021).
  - CS 383: Artificial Intelligence (Spring 2020).
  - CS 240: Introductory Probability (Spring 2019, Fall 2019, Fall 2020).
- **Math:**
  - Math 551: Numerical Methods (Spring 2020, Spring 2021).
  - Math 128: Calculus (Spring 2019, Fall 2019).
- Outstanding TA Award for CS370 and CS240. Chosen by instructors for timely, detailed grading, (hyper)-active in discussion board and others.

## Class Projects

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**WatchAll: a cross-platform discovery app**

**Collaborators:** Liam Brandwein, Aarat Satyavolu

*Web development*

*CS 326 (Fall 2021)*

- Developing a web application to allow users to discover streams from different platforms (Twitch, Youtube, Facebook Gaming).

**Genderness in Anonymized Resumes**

**Collaborators:** Hannah Lerner, Aparimit Chandra

*Natural Language Processing*

*CS 689 (Spring 2021)*

- Explored gender bias of human annotators and gender recognizability of NLP models in anonymized resumes. [\[report\]](#).

**Infectious Disease Networks**

**Collaborator:** None

*Graph, Networks*

*CS 591NR (Spring 2020)*

- Implemented SIR model and Gillespie sampling for epidemic in a small location population. Implemented degree-based mean-field network to model epidemic propagation in large connected population. [\[original paper\]](#), [\[Jupyter Notebook\]](#).

**Lung Cancer Model**

**Collaborators:** Vishal Sarsani

*Bayesian Statistics*

*Statistics 610 (Fall 2019)*

- Reproduced a Bayesian Mixture Model for Lung Cancer Prediction. The Bayesian model fitted some spatial interaction parameters between different cell types from medical image data. These parameters can then be used as predictors in Cox regression for cancer progression. [\[original paper\]](#), [\[report\]](#).

**Movie Recommender**

**Collaborator:** Steven Qiu

*Recommender System*

*CS 590OP (Fall 2019)*

- Used Alternating Least Square (ALS) for collaborative filtering on the MovieLens dataset. Utilized Locality Hashing to efficiently compute an user's inclination towards a massive pool of products. [\[report\]](#).

**Image Denoising**

**Collaborator:** None

*Computer vision, Monte Carlo Markov Chain (MCMC)*

*Math 697AM (Spring 2019)*

- Used Ising Model and Gibbs Sampler to reconstruct images polluted by Gaussian noise. [\[report\]](#)

## Talks & Presentations

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**Multi-agent Hierarchical Reinforcement Learning in Urban Search and Rescue**

**Virtual**

*REU Poster Session*

*Aug. 2021*

**Instagram Explore's Contextual Ad Load**

**Virtual**

*Facebook teamwide Presentation*

*Aug. 2020*

**Deep Learning for Neuronal Estimation**

**Amherst, MA**

*REU New England Conference*

*July 2019*