

# Yu-Zhen Janice CHEN

Applying for 2023 Summer Research Internship

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## Education

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### University of Massachusetts, Amherst

USA

MS/PhD in Computer Science

Aug. 2019 – (Expected) 2025

**Coursework:** Reinforcement Learning, Machine Learning, Advanced Algorithms, Mathematical Foundations of Artificial Intelligence, Online Learning and Inference, Distributed Machine Learning, Quantum Information Systems

### The Chinese University of Hong Kong (CUHK)

Hong Kong

BSc with Honours in Computer Science (1st Class)

Aug. 2014 – July 2019

**Graduate level coursework:** Foundations of Optimization, Probabilistic Models, Approximation Algorithms

## Research Interest

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I am broadly interested in *statistical machine learning, sequential decision making, performance analysis, modeling, and algorithm design for computing systems*. My current research efforts focus on multi-agent sequential decision making and distributed statistical inference under resource constraints. Potential applications of my research include online advertising and cooperative learning among IoT devices or wireless sensors.

## Research Projects and Publications

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### Sequential Decision Making

*Studied various challenges, e.g. multi-party cooperation, heterogeneous problem scales, guarantee requirements*

1. Communication Protocol for Cooperative Multi-Agent Bandits with Heterogeneous Agents  
Y.Z. Janice Chen, Lin Yang, Xuchuang Wang, Xutong Liu, Mohammad Hajiesmaili, John C.S. Lui, Don Towsley. (To be submitted)
2. Distributed Bandits with Heterogeneous Agents  
Lin Yang, Y.Z. Janice Chen, Mohammad Hajiesmaili, John C.S. Lui, Don Towsley. In INFOCOM, 2022.
3. Hierarchical Learning Algorithms for Multi-Scale Expert Problems  
Lin Yang, Y.Z. Janice Chen, Mohammad Hajiesmaili, Mark Herbster, Don Towsley. In POMACS, 2022.
4. Cooperative Stochastic Bandits with Asynchronous Agents and Constrained Feedback  
Lin Yang, Y.Z. Janice Chen, Stephen Pasteris, Mohammad Hajiesmaili, John C.S. Lui, Don Towsley. In NeurIPS, 2021.
5. An Online Learning Approach to Network Application Optimization with Guarantee  
Kechao Cai, Xutong Liu, Y.Z. Janice Chen, John C.S. Lui. In INFOCOM, 2018.

### Statistical Inference under Resource Constraints

*Studied parametric/non-parametric estimation in distributed setting with vertical data separation and costs*

1. Estimating Mutual Information with Resource Constraints  
Y.Z. Janice Chen, Markos A. Katsoulakis, Luc Rey-Bellet, Don Towsley. (In Progress)
2. Bootstrapping Distributed Statistical Estimation with Resource Constraints  
Y.Z. Janice Chen, Daniel S. Menasche, Don Towsley. (In Progress)
3. To Collaborate or Not in Distributed Statistical Estimation with Resource Constraints?  
Y.Z. Janice Chen, Daniel S. Menasche, Don Towsley. In 55th Annual Conference on Information Sciences and Systems (CISS), 2021.

### Graphlet Count Learning

*Investigated how to apply CNN on graph data for graphlet counting*

1. Learning to Count: A Deep Learning Framework for Graphlet Count Estimation  
Xutong Liu, Y.Z. Janice Chen, John C.S. Lui, Konstantin Avrachenkov. In Network Science, 2020.
2. Graphlet Count Estimation via Convolutional Neural Networks  
Xutong Liu, Y.Z. Janice Chen, John C.S. Lui, Konstantin Avrachenkov. In Complex Networks, 2018.

## Research and Work Experience

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### Research Assistant, Advanced Classical and Quantum Information Research Lab

UMass Amherst, USA

Supervised by Prof. Don Towsley

Aug. 2019 – Present

- Published research on statistical inference and sequential decision making
- Implemented codes for statistical inference, multi-armed bandits, and output visualization
- Performed extensive literature reviews
- Organized biweekly group meeting for nine PhD students in Prof. Don Towsley's and Prof. Mohammad Hajiesmaili's labs

**Research Student, Advanced Networking and System Research Lab**

**CUHK, Hong Kong**

*Supervised by Prof. John C.S. Lui*

*May 2017 – June 2019*

- Modeled network application optimization problems (e.g. opportunistic multichannel selection, crowdsourcing) as multi-armed bandits and implemented bandits algorithms in C++
- Designed a CNN framework which offers 20x to 100x speed improvement on predicting graphlet counts in graphs

**Summer Research Intern, INRIA**

**Sophia Antipolis, France**

*Supervised by Dr. Konstantin Avrachenkov*

*June 2018 – July 2018*

- Conducted experiments to compare our graphlet counting CNN framework with existing methods using Python

**Software Engineer Intern, Cisco Systems**

**San Jose, USA**

*Supervised by Dr. Debojyoti Dutta*

*Aug. 2016 – July 2017*

- Redesigned and refactored the authorization and authentication server of a cloud-based logging and monitoring data aggregation system as a service using Golang: introduced scope-based access control into the system, implemented the logic using OAuth2 framework and object-relational mapping library

**Part-time Programmer, CUHK**

**Hong Kong**

*Supervised by Dr. Mole T.Y. Wong*

*Jan. 2016– May 2016*

- Built web application for game AI to play against one another using Node.js, React.js, Redux, Socket.IO and Scss

**Assistant Software Developer, SLLIN Consultants (HK IT Consulting Firm)**

**Hong Kong**

*Supervised by Mr. SL Ho*

*May 2015 – Mar. 2016*

- Created responsive web music player containing dynamic contents using JavaScript, jQuery, MySQL, Bootstrap, HTML

**Programming Skills**

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Python (NumPy, SciPy, PyTorch, Pandas, scikit-learn), Matlab, LaTeX, git, Golang, C++, Javascript, Qiskit

**Teaching Experience**

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2020 Fall Teaching Assistant of COMPSCI 590Q Quantum Information Systems, UMass Amherst CICS

**Service**

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2022 Graduate Student Representative, CICS, UMass Amherst

2022 Volunteer Teaching Assistant in UMass Eureka! Program, workshop for K12 underrepresented students in CS

2021 Mentor in PhD Application Support Program, supporting underrepresented candidates for CS PhD applications

**Awards**

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2019 CICS Fellowship, UMass Amherst

2017 Prof. Charles K. Kao Research Exchange Scholarship, CUHK Faculty of Engineering

2017 ELITE Stream Student Scholarship, CUHK Faculty of Engineering

2014 Dean's List, CUHK Faculty of Engineering

2014 Annual Scholarships for Outstanding Academic Performance, CUHK S.H. Ho College