

# Xirong Cao

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## EDUCATION

### Fordham University

*M.Sc. in Computer Science; GPA: 3.82/4.00*

New York, NY

*Jan 2022 – Feb 2024*

- **Thesis:** IP Protection in Generative Models

### University of California, Irvine

*B.A. in Psychology; GPA: 3.2/4.00*

Irvine, CA

*Fall 2015 – Jun 2019*

- **Path:** Cognitive Ability, Memory, Learning, Probability Linguistic

## PUBLICATIONS

- [1] **Xirong Cao**, Xiang Li, Divyesh Jadav, Yanzhao Wu, Zhehui Chen, Chen Zeng, and Wenqi Wei. “Invisible Watermarking for Audio Generation Diffusion Models”, IEEE/TPS Conference on Trust, Privacy and Security in Intelligent Systems, and Applications (TPS), Atlanta, November 2023. [\[Link\]](#)
- [2] **Xirong Cao**, Mohamed Rahouti, Senthil Kumar Jagatheesaperumal, Kaiqi Xiong. “Psychological Information Sharing Using Ethereum Blockchain and Smart Contracts”, BCCA 2023 Conference Blockchain Computing and Applications, Kuwait Fintech and Blockchain Summit, Kuwait, October 2023.

## RESEARCH EXPERIENCE

### Invisible Watermarking for Audio Generation Diffusion Models

Fordham, NY

*Graduate Researcher*

*Jun 2023 – Sep 2023, [\[code\]](#)*

- Develop an innovative audio IP protection method in generative models. Supervised by Dr. Wei Wenqi.
- Write a model pipeline for mel-spectrogram conversion, trigger embedding, and watermarking diffusion.
- Train VGG-16 and ResNeXt classifiers; evaluated trigger performance through detailed graphical analyses.

### Blockchain As Private information Sharing Platform

Fordham, NY

*Graduate Researcher*

*Jan 2023 – Apr 2023, Part-time*

- Pioneered blockchain-based solutions for private data sharing, addressing existing use case gaps.
- Designed and implemented smart contract data operations, developed a user interface.
- Conducted comprehensive analyses on system feasibility, focusing on security and scalability.

## PROJECTS

### Stock Price trend Prediction with Markov Chain

*Machine Learning, Apr 2022*

- Adopt discrete way of approaching continuous data. Calculating new attribute data with moving average.
- Expanding the small dataset by randomly combining numeric data using equal frequency binning.
- Create stochastic matrices(positive and negative) for prediction. Evaluate accuracy and recall on prediction.

## WORK EXPERIENCE

### ForChange Tech

ShenZhen, China

*Data Analyst*

*Sep 2020 – June 2021*

- Work on 50k users classification task on company’s online educational products, combining data science and psychological approaches to define the preference of users.
- Design a user-analysis plan based on the need of understanding users’ behavior in online learning situations. Apply k-means to group users, generating visualization presentations.
- Networking with different departments, and distributing results. Participate in designing how to capture users’ demands in different dimensions. Provide data buried thoughts from psychological perspectives.

## SERVICE

### Conference Reviewer

- ICLR 2024

## SKILLS

**Programming:** Python, JavaScript, C/C++, Shell Script, Git, SQL/NoSQL, Cloud Cluster

**Libraries/framework:** PyTorch, Scikit-Learn, NumPy, Pandas, Matplotlib, Seaborn, React, Astro

**Communication:** English (Fluent), Chinese (Native), Psychological Counseling Certificate