

# Xiang Ji

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## Qualifications

### Expertise

- Full stack development
- Health + AI
- Computational neuroscience

### Programming languages

Java, Python, C++, JavaScript, TypeScript

## Work

### Software Engineer – Google

2014.10 – present

Maple: Health Data Labeling Platform

- Tech Lead Manager, responsible for health data labeling needs across Alphabet

Actions on Google (AoG): third party developer platform for Google Assistant

- Launched AoG console backend

Firebase: Google's mobile focused platform for third party developers

- Launched Firebase console backend

### SDE intern – Twitter

2013.8 – 2013.12

Designed and implemented a real-time tweet recommendation service

- Using content-boosted collaborative filtering with random walk model on Hadoop / Storm

### SDET intern – Hulu

2010.9 – 2010.12

Developed recommendation system unit tests

- Unit testing in Ruby and Java
- Deployed test coverage tool

## Education

### Master of Mathematics, Computer Science

2012.4 – 2014.6

University of Waterloo, Waterloo, Canada

**Thesis:** Path Integration with Velocity-Controlled Oscillators

**Relevant courses:** Computational Neuroscience, Applied Machine Learning, Probabilistic Inference and Machine Learning

### Exchange Student, Computer Science

2011.9 – 2012.3

University of Waterloo, Waterloo, Canada

**Thesis:** Hippocampus Modeling on Spatial Alternation Task

**Relevant courses:** User Interfaces, Machine Learning, Algorithms, Computer Vision

### Bachelor of Engineering, Computer Science

2008.9 – 2012.6

Tsinghua University, Beijing, China

**Relevant courses:** Artificial Intelligence, Operating System, Network, Computer Architecture, Data Structures

## Research

### Modeling Path Integration using Velocity Controlled Oscillators

#### Computational Neuroscience

- Simulated rat's hippocampus using ~50,000 virtual neurons
- Built a virtual rat that is able to navigate in a 2D space
- Included stabilizing mechanisms and sensory inputs

### Multi-level Position Reconstruction from Hippocampal Place Cells

#### Applied Machine Learning

- Implemented machine learning algorithms on ~20GB neural data
- Designed multiple feature levels for faster and more accurate learning
- Involved Bayesian networks in learning on neural data
- Average error reduced to 1/3 of previous results

### Private Learning with Homomorphic Encryption

#### Probabilistic Inference and Machine Learning

- Reviewed different private machine learning approaches
- Discussed the difference of schemes and algorithms
- Evaluated algorithm efficiency based on feature amount and data size

### Approaches to Handwritten Digit Recognition

#### Machine Learning

- Implemented several ML algorithms on recognizing handwritten digits
- Compared time and accuracy of logistic regression, SVM and ANN

### Talking Avatar with Facial Expressions on Android Platform

#### Summer workshop

- Built a virtual face with expressions and voice on Android platform
- Involved in expression modeling, audio-video sync, UI design, etc.
- Used Java and C, including JNI

## Publications

1. **X. Ji**, S. Kushagra, J. Orchard, "Updating the Entorhinal Cortex Fourier Model with Visual-Sensory Input", *Canadian Conference on Artificial Intelligence (AI) 2013*.
2. J. Orchard, H Yang, **X. Ji**, "Does the Entorhinal Cortex use the Fourier Transform?", *Canadian Conference on Artificial Intelligence (AI) 2013*.
3. B. Liu, G. Wu, Z. Wang, **X. Ji**, "Semantic integration of differently asynchronous audio-visual information in videos of real-world events in cognitive processing: An ERP study", *Neuroscience Letters*, July 2011.