

Xiang Ji

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Objective	Software Engineer, Machine Learning	
Qualifications	Programming languages Java, Python, C, C++, Scala, Scheme	
	Developing tools <i>Machine learning:</i> Mahout, MATLAB <i>Distributed system:</i> Hadoop, Pig, Scalding, Storm, Summingbird <i>Cross-protocol development:</i> Thrift, Finagle <i>Efficiency tooling:</i> IntelliJ IDEA, Eclipse, Mesos, Maven, Ant <i>Neural network simulation:</i> Nengo, NuPic	
	Experienced fields <ul style="list-style-type: none">• Large scale machine learning system design / implementation• Algorithm and data structure• Neural network modeling• Basic knowledge in security, OS, UI, computer vision, etc.	
	Education	
	Master of Mathematics, Computer Science	2012.4 – 2014.4 (expected)
	University of Waterloo, Waterloo, Canada Thesis topic: 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 topic: 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	
Internship	SDE – Twitter Inc., San Francisco	2013.8 – 2013.12
	Designed and implemented a large scale real-time recommendation system <ul style="list-style-type: none">• Serving Twitter's recommendation testing platform• Using content-boosted collaborative filtering with random walk model on Hadoop / Storm	
	SDET – Hulu LLC., Beijing	2010.9 – 2010.12
	Developed recommendation system unit tests <ul style="list-style-type: none">• Implemented Automatic testing in Ruby and Java• Deployed test coverage tool Emma for java tests	

Projects

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 audiovisual information in videos of real-world events in cognitive processing: An ERP study", *Neuroscience Letters*, July 2011.

Awards

David R. Cheriton Graduate Scholarship, \$10,000	2012 – 2013
UW Special Graduate Scholarship, \$4,000	2012 – 2013
Outstanding Student Leader, Tsinghua University	2011
Tencent Scholarship, RMB 1,000	2009
National Physics Competition for University Students, Second Prize	2009
National Physics Olympiad, First Prize	2008

Interests

Machine learning: Deep learning; Large scale / parallel / online ML schemes

Brain simulation: How can bottom-up methods meet top-down methods

Others: Music arrangement, photography, jogging, cycling