Xiang Ji

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Objective **Software Engineer, Machine Learning**

Qualifications

Programming languages
Java, Python, C, C++, Scala, Scheme

Developing tools
Machine learning: Mahout, MATLAB
Distributed system: Hadoop, Pig, Scalding, Storm, Summingbird
Cross-protocol development: Thrift, Finagle
Efficiency tooling: Intellij IDEA, Eclipse, Mesos, Maven, Ant
Neural network simulation: Nengo, NuPic

Experienced fields
- 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
- 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
- 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

Articles in Refereed Journals

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