

Xiao Ma

National University of Singapore

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EDUCATION

National University of Singapore (NUS), Singapore

2017 - Present

Doctor of Philosophy in COMPUTER SCIENCE

Supervisor: Prof. David Hsu

Shanghai Jiao Tong University (SJTU), Shanghai

2013 - 2017

Bachelor of Science in COMPUTER SCIENCE

PUBLICATIONS

Xiao Ma, Peter Karkus, David Hsu, Wee Sun Lee. "Particle Filter Recurrent Neural Networks", *arXiv preprint, arXiv:1905.12885*, 2019

Peter Karkus, **Xiao Ma**, David Hsu, Leslie Pack Kaelbling, Wee Sun Lee, Tomas Lozano-Perez. "Differentiable Algorithm Networks for Composable Robot Learning", *Robotics: Science and Systems (RSS)*, 2019 (**Best System & Student Paper** finalist)

Xiao Ma, Peter Karkus, David Hsu, Wee Sun Lee. "PF-LSTM: Belief State Particle Filter for LSTM", *In RLPO Workshop, Advances in Neural Information Processing Systems (NeurIPS)*, 2018

Xiao Ma, Xiaofeng Gao, Guihai Chen. "BEEP: a Bayesian perspective Early state Event Prediction model for online social networks", *IEEE International Conference on Data Mining (ICDM)*, 2017

Xiao Ma, Zhenzhe Zheng, Fan Wu and Guihai Chen. "Trust-Based Time Series Data Model for Mobile Crowdsensing", *IEEE International Conference on Communications (ICC)*, 2017

PATENTS

Bin Sheng, **Xiao Ma**. "Segmentation of Abdominal Adipose Tissues via Deep Learning", CN106355574A, 2016

RESEARCH PROJECTS

Particle Filter Recurrent Neural Networks

July 2018 - present

Supervised by Prof. David Hsu and Prof. Wee Sun Lee

AdaComp@NUS

- Extend generic RNNs by maintaining a latent state distribution, approximated by a set of weighted particles
- Maintain the latent state distribution by a fully differentiable particle filter algorithm

Differentiable Algorithm Networks

July 2018 - present

Supervised by Prof. David Hsu and Prof. Wee Sun Lee

AdaComp@NUS

- Compose a robot system with neural network modules, each encoding a differentiable robot algorithm and an associated model, and optimize the policy by end-to-end learning
- Provide high data efficiency given the structural prior
- Leverage imperfections of algorithms and models between the components by end-to-end learning

Early State Hot Event Prediction in Social Networks

Nov. 2016 - Jun. 2017

Undergraduate Research Assistant, Supervised by Prof. Xiaofeng Gao

Advanced Network Lab@SJTU

National Undergraduate Training Programs for Innovation and Entrepreneurship

- Designed two Semi-Naive Bayes Classifier based models, BEEP, SimBEEP, for early state event prediction whose performances outperform the state-of-the-art prediction models in the very early state.

Time series modeling in Crowd Sensing Network

Oct. 2014 - Dec. 2016

Undergraduate Research Assistant, Supervised by Prof. Fan Wu

Advanced Network Lab@SJTU

- Quantified the users' reliability in Crowdsensing and modeled the Time Series Data with a Dynamic Bayesian Network and proposed a corresponding EM algorithm to learn the parameters effectively and efficiently.

WORK EXPERIENCE

Software Engineer Intern at **Intel** Asia Pacific R & D Center

May 2017 - Dec. 2017

- Optimize the Javascript compiler, V8 engine, of the Google Chrome browser
- Develop automatic testing framework, target and submit fixes to the patches, mainly about regular expressions

AWARDS

Academic Excellence Scholarship

2014

Honorable Mention of Mathematical Contest In Modeling

2015

Academic Excellence Scholarship

2016

Honorable Mention of Mathematical Contest In Modeling

2016

Excellent Project of the *National Undergraduate Training Programs for Innovation and Entrepreneurship*

2016

NUS Research Scholarship

2017

Second Prize in iNTUition Hackathon

2017