Xinyu Li

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Education

Rutgers, The State University of New Jersey — Newbrunswick, New Jersey
Ph.D. candidate at Department of Electrical & Computer Engineering — *Sep, 2013 – May, 2018*

University of Electronic Science and Technology of China — Chengdu, China
Bachelor of Communication Engineering — *Sep, 2009 – May, 2013*

Experience

Amazon — Seattle, Washington
Applied Scientist — *May 2018 – Present*
Machine Learning Scientist Intern — *June 2017 – August 2017*

Rutgers, The State University of New Jersey — Newbrunswick, New Jersey
Research Assistant @ Multimedia Lab — *Fall 2013 - Present*
Teaching Assistant @ Department of Electrical & Computer Engineering — *Spring 2014 & Fall 2017*

University of Electronic Science and Technology of China — Chengdu, China
Undergraduate Research Assistant @ Image Processing Lab — *2012 - 2013*

Research

Amazon — Seattle, Washington
Deep Reinforcement Learning for Fraud Detection — *June 2017 – August 2017*
Design and implement a multimodal deep neural network for fraud detection
Implement the deep reinforcement learning to make fraud detection system adaptive to feature shifting

Rutgers, The State University of New Jersey — Newbrunswick, New Jersey
Conversation Understanding — *2017 - 2018*
Word-level multimodal feature extraction and alignment.
Hierarchical encoder-decoder for improved emotion recogniiton, sentiment analysis and trait analysis.
Hiererchical decoder for unbiased concurrent emotion recognition.
Publicaitons in top conference: ACL, COLING, ACM MM, etc.

Activity Recognition — *2015 - 2018*
Generate online activity masks that indicates the location of activity performer using conditional GAN and recognize activities.
Propose and implement a deep concurrent regression structure for concurrent activity recognition
Reinforcement learning based spatial-temproal sample for activity recognition.
Publications in top conference: ACM MM, IPSN, etc.

Activity Recognition in Medical Application — *2015 - 2017*
Propose the RSS map representation for passive RFID system and use ConvNet for RFID based activity recognition.
Online process progress (the overall completeness, phase and time-left to complete) estimation based on a deep regression model.
Design and deploy our system with commercially available sensors in an actual trauma room in Children's National Medical Center.
Publications in top conference: Sensys, Ubicomp, IPSN, ICHI, etc.

Process Mining and Representation — *2017 - 2017*
Mining the sequential association within a sequence using attention model and LSTM.
Turn the association rules into natural language.

People Tracking and Room Layout Mapping — *2013 - 2014*
Privacy-preserving dynamically generate room layout mapping based on depth sensing.
People tracking and identification using velocity matching with passive RFID and depth sensing.

University of Electronic Science and Technology of China — Chengdu, China

Airport Runway Foreign Object Detection (FOD) — *2012 - 2013*

Image de-hazing using wavelet transformation and dart channel based approach
Foreign object detection in low resolution image using HoG with ensemble classifiers

Infrared Video Stabilization — *2012 - 2013*

Infrared frame registration using MSER and affine transformation.
The missing data compensation using dense optical flow.

Independent/Course Project

Voice Control Based Home Automation — *Fall 2013*

A system that is able to recognize speech command and control multiple smart home devices
A system is able to learn the user's lifestyle and accordingly control the devices even the user only give very simple commands.

Simulator of Stock Trading — *Spring 2014*

A system simulates the stock trading with account management and real-world stock price updates
A platform (web application and android App) that allows multiple user to compete with each other on stock trading

Twitter Mining and Analysis — *Spring 2015*

Mining real-time and historical twitter data and automatically classify different topics
Visualize and analyze the data in different clusters

Piano Music Composing — *Fall 2015*

Piano music composing using biaxial-LSTM which takes the MIDI music as input An multimodal deep learning structure that is able to learn the chord and melody separately in different branch and generate composed music with synchronized chord and melody

Teaching

Teaching assistant of programming methodology I	Spring 2014
Teaching assistant of programming methodology II	Fall 2017
Part Time Lecturer of Software Engineering I	Spring 2016, Fall 2016, Spring 2017, Fall 2017
Mentor of Capstone Project	Fall 2015, Fall 2016

Skills

Programming Language: C#, python, Java, Matlab, R, C++, Php, SQL
Deep Learning Framework: TensorFlow, Keras, Theano, CNTK, MXNet
OS and Tools: Windows, Linux, Visual Studio, Git, SSH
Language: Fluently speaking English and Chinese

Publications

2018

1 **Li, Xinyu***, Yue Gu*, Kaixiang Huang, Kangning Yang, Shiyu Fu, Shuhong Chen, Moliang Zhou, Ivan Marsic. "Human Conversation Analysis Using Attentive Multimodal Networks with Hierarchical Encoder-Decoder" ACM Multimedia 2018 (ACMMM 18') Accepted for ORAL presentation (8.5%, *: equally contributed)
2 Yue Gu, Kangning Yang, Shiyu Fu, Shuhong Chen, **Xinyu Li** and Ivan Marsic. "Hybrid Attention based Multimodal Network for Spoken Language Understanding." The 27th International Conference on Computational Linguistics (COLING). 2018. Accepted for ORAL presentation.
3 Yue Gu, Kangning Yang, Shiyu Fu, Shuhong Chen, **Xinyu Li** and Ivan Marsic. "Multimodal Affective Analysis Using Hierarchical Attention Strategy with Word-Level Alignment." The 56th Annual Meeting of the Association for Computational Linguistics (ACL). 2018. Accepted for ORAL presentation.
4 **Li, Xinyu**, Yanyi Zhang, Jinayu Zhang, et al. "Attention Network and DQN Based Tuning for Online Activity Recognition." Under review.

2017

1 **Li, Xinyu**, Yanyi Zhang, Jinayu Zhang, et al. "Region-based Activity Recognition Using Conditional GAN." In Proceeding of ACM Multimedia 2017. (ACMMM 17')
2 **Li, Xinyu**, Yanyi Zhang, Jianyu Zhang, Moliang Zhou, Shuhong Chen, Yue Gu, Yueyang Chen, Ivan Marsic, Richard A. Farneth, and Randall S. Burd. "Progress Estimation and Phase Detection for Sequential Processes." Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies 1, no. 3 (2017): 73. (Ubicomp 2017 discussion paper)

3 **Li, Xinyu**, Yanyi Zhang, Jianyu Zhang, Shuhong Chen, Yue Gu, Richard A. Farneth, Ivan Marsic, and Randall S. Burd. "3D activity localization with multiple sensors." In IPSN, pp. 297-298. 2017.
4 Zhang, Yanyi, **Xinyu Li**, Jianyu Zhang, Shuhong Chen, Moliang Zhou, Richard A. Farneth, Ivan Marsic, and Randall S. Burd. "CAR-a deep learning structure for concurrent activity recognition." In IPSN, pp. 299-300. 2017.
5 Gu, Yue, **Xinyu Li**, Shuhong Chen, Jianyu Zhang, and Ivan Marsic. "Speech Intention Classification with Multimodal Deep Learning." In Canadian Conference on Artificial Intelligence, pp. 260-271. Springer, Cham, 2017.
6 Gu, Yue, **Xinyu Li**, Shuhong Chen, Hunagcan Li, Richard A. Farneth, Ivan Marsic, and Randall S. Burd. "Language-Based Process Phase Detection in the Trauma Resuscitation." In Healthcare Informatics (ICHI), 2017 IEEE International Conference on, pp. 239-247. IEEE, 2017.
7 Zhou, Moliang, Sen Yang, **Xinyu Li**, Shuyu Lv, Shuhong Chen, Ivan Marsic, Richard A. Farneth, and Randall S. Burd. "Evaluation of Trace Alignment Quality and its Application in Medical Process Mining." In Healthcare Informatics (ICHI), 2017 IEEE International Conference on, pp. 258-267. IEEE, 2017.
8 **Xinyu Li**, Yanyi Zhang, Ivan Marsic, et.al. "People Tracking and Identification Based on Passive RFID and Depth Sensing", submitted to IEEE Sensor Journal.

2016

1 **Li, Xinyu**, Yanyi Zhang, Ivan Marsic, Aleksandra Sarcevic, and Randall S. Burd. "Deep learning for rfid-based activity recognition." In Proceedings of the 14th ACM Conference on Embedded Network Sensor Systems CD-ROM, pp. 164-175. ACM, 2016.
2 **Li, Xinyu**, Dongyang Yao, Xuechao Pan, Jonathan Johannaman, JaeWon Yang, Rachel Webman, Aleksandra Sarcevic, Ivan Marsic, and Randall S. Burd. "Activity recognition for medical teamwork based on passive RFID." In RFID (RFID), 2016 IEEE International Conference on, pp. 1-9. IEEE, 2016. (Nominated Best Paper)
3 **Li, Xinyu**, Yanyi Zhang, Ivan Marsic, and Randall S. Burd. "Privacy preserving dynamic room layout mapping." In International Conference on Image and Signal Processing, pp. 61-70. Springer, Cham, 2016.
4 Yang, Sen, Xin Dong, Moliang Zhou, **Xinyu Li**, Shuhong Chen, Rachel Webman, Aleksandra Sarcevic, Ivan Marsic, and Randall S. Burd. "VIT-PLA: Visual Interactive Tool for Process Log Analysis." In KDD Workshop on Interactive Data Exploration and Analytics. 2016.
5 **Li, Xinyu**, Yanyi Zhang, Mengzhu Li, Ivan Marsic, JaeWon Yang, and Randall S. Burd. "Deep neural network for RFID-based activity recognition." In Proceedings of the Eighth Wireless of the Students, by the Students, and for the Students Workshop, pp. 24-26. ACM, 2016.
6 **Li, Xinyu**, Yanyi Zhang, Mengzhu Li, Shuhong Chen, Farneth R. Austin, Ivan Marsic, and Randall S. Burd. "Online process phase detection using multimodal deep learning." In Ubiquitous Computing, Electronics & Mobile Communication Conference (UEMCON), IEEE Annual, pp. 1-7. IEEE, 2016.

2013

1 Yang, Yanjing, Zhizhong Fu, **Xinyu Li**, Chang Shu, and Xiaofeng Li. "A novel single image dehazing method." In Computational Problem-solving (ICCP), 2013 International Conference on, pp. 275-278. IEEE, 2013.

2012

1 **Li, Xinyu**, Chunhui Zeng and Limeng Pu. "In Campus Bicycle Management System Based On Passive RFID.", Communication Technology 45, no. 11 (2012): 81-84.
2 **Li, Xinyu**, Yanjing Yang and Chang Shu. "License Plate Recognition In Complex Weather Conditions." Electronic Technology And Science 25, no. 11 (2012): 91-94.

Awards

Rutgers ECE Achievement Award Nominees	May. 2018
Rutgers TA/GA Development Fund	July. 2017
SIGCHI Student Travel Grant	May. 2017
ECE PhD Research Excellence Award	December. 2016
School of Engineering Conference Travel Award	September. 2016
IEEE RFID Student Travel Grant	May. 2016
IEEE RFID Best Paper Nominees	May. 2016

Professional Service

Reviewer for Pattern Recognition Letters (Elsevier)
Reviewer for IMWUT/Ubicomp (External)
Reviewer for ACM Multimedia (External)
Reviewer for Journal of Computational Methods in Sciences and Engineering (IOS)