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Xiaowei Liu

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EDUCATION

PhD in Electrical Engineering, Stony Brook University *2012 - Present*
Research interest: citation network mining, social interaction tracking applications **Cum. GPA: 3.96/4.0**
B.S. in Communication Engineering, Beijing Univ. of Posts and Telecommunications *2008 - 2012*

SKILLS

Programming: Proficient in C++/C, Matlab, embedded C, some experience with Shell, R, Java, VHDL, System C
Tools/software: Selenium WebDriver, igraph (R), Gephi, openSMILE, Weka, Tensorflow
Teaching: Teaching assistant for 8 undergraduate courses and laboratories

RESEARCH EXPERIENCE

Emotion recognition using audio data on wearable devices *2016-Present*

- Automated extraction of 1582 speech features from speech files using the Emo-db and RML databases and trained support vector machine classifiers to recognize 7 emotions with highest accuracy equals 86.54%.
- Experimented speech emotion classification with deep neural networks using Python and Tensorflow.
- (On going) Build real-time continuous emotion recognizer prototype with Raspberry Pi3 and implement techniques (noise reduction, silence trimming, etc.) to improve real-world recognition accuracy.

Cyber-physical system that tracks and models real-time interaction patterns *2015-2016*

- Built an embedded system that performs speaker identification for tracking group interaction patterns with the Cypress PSoC 3 board using C. The devices were used in a group discussion session.
- Implemented a pattern extraction technique for interaction modeling and involved in pattern visualization.
- Designed a local control strategy for analyzing the trade-offs between accuracy and various costs.

Mining and characterizing idea evolution in research communities *2014-2016*

- Designed an automatic citation network generator in Java using Selenium WebDriver and Gephi that collects publication citation info. from online digital libraries as well as generates and visualizes large citation networks.
- Performed unsupervised clustering of publications in citation networks using K-means algorithm via PCA with 10+ graph attributes extracted using R.
- Developed algorithms to model knowledge evolution from measured network attributes using R and C++.
- Designed and implemented an algorithm in C++ to discover research groups from large citation networks and identify their roles in the flow of knowledge in scientific communities.

RELEVANT PROJECTS

Course projects

- Implemented two computer aided design algorithms (circuit partitioning and partitioning based placement) in C++ and tested on the ISPD98 Circuit Benchmark.
- Performed frequent pattern analysis and data classification by implementing the FP-growth and decision tree algorithms in C++ using UCI Machine Learning Repository.
- Built a sound based smart watch on PSoC 1 evaluation board in C with hardware/software co-design methodology.
- Implemented digital image enhancement algorithms and filtering techniques in MATLAB.

Personal projects

- Built a dictator prototype using Raspberry Pi3 that performs continuous speech recognition using Google Cloud Speech API and Python.
- Designed and built an automatic text summarizer that mines ideas from PDF converted text files with extraction-based summarization, implemented using C++, Open Text Summarizer, and LDA keywords extraction algorithm.

PUBLICATIONS

- **X. Liu** and A. Doboli,“Moving beyond traditional electronic design automation: Data-driven design of analog circuits”, International Conference on Synthesis, Modeling, Analysis and Simulation Methods and Applications to Circuit Design (SMACD), June 2016.
- **X. Liu**, A. Doboli and F. Ye, “Optimized Local Control Strategy for Voice-based Interaction-tracking Badges for Social Applications”, International Conference on Computer Design (ICCD), August 2015.
- J. Wei, **X. Liu**, X. Zhong and X. Fu, “Interference evaluation of control channels under the co-existence of LTE-FDD and TD-LTE”, The International Conference on Information Networking (ICOIN), February 2014.
- **X. Liu** and X. Zhong, “Effective Frequency Plan Scheme for Downlink Coordinated Multi-point Transmission in LTE-A System”, Advanced International Conference on Telecommunications (AICT), May, 2012.