Ren, Wenyu

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EDUCATION

University of Illinois at Urbana-Champaign (UIUC) **Urbana, Illinois, USA**

Ph.D. in Computer Science (GPA: 3.88/4.0) *August 2013 – Present*

Tsinghua University (THU) **Beijing, China**

Bachelor of Engineering, Electronics Engineering *September 2009 – June 2013*

GPA Major: 93.7/100; Overall: 92.82/100; Ranking 6/239 (Top 3%)

Stony Brook University (SBU) **Stony Brook, New York, USA**

Exchange Student, Electrical & Computer Engineering (GPA: 4.0/4.0) *August 2011-December 2011*

KEY COURSES

Machine Learning, Computer Networks, Advanced Computer Networks, Wireless Networks & Mobile Systems, Distributed Systems, Advanced Distributed Systems, Computer Security, Operating Systems Design, Randomized Algorithms, Numerical Analysis, Fundamental Algorithms, Computer Architecture

PROFESSIONAL SKILLS

C/C++, Java, Haskell, Python, PHP, HiveQL, Matlab scripts, Verilog, VHDL

WORK EXPERIENCES

Facebook (Advertisement Ranking Team) **Seattle, Washington, USA**

Software Engineer Intern *May 2018- August 2018*

- Designed and built a feature selection algorithm for the neural networks used in advertisement ranking.
- The algorithm inherits advantages from two existing algorithms. It is fast and can also avoid selecting correlated features. Promising gains are achieved by applying the algorithms to some commonly used online models.

Facebook (Site Integrity Team, Machine Learning Group) **Menlo Park, California, USA**

Software Engineer Intern *May 2016- August 2016*

- Designed and built a set of auto-retrained, machine-learning-based, real-time spam classifiers to target newly-emerged spam every day.
- Built real-time training data collection and the auto-retraining and auto-evaluation of the classifiers.
- Used techniques such as random forests and Hive and programmed mainly in Haskell, PHP and Python.

Google (Search Infrastructure Team) **Mountain View, California, USA**

Software Engineer Intern *May 2015- August 2015*

- Worked on batch processing, namely MapReduce, on Google's new scalable, multi-version, globally-distributed, and synchronously-replicated database named Spanner.
- Conducted a benchmark analysis on our team-specific data between Spanner and BigTable in terms of time and storage overhead and improved the current framework to provide Spanner support.

RESEARCH INTERESTS

Machine Learning, Anomaly Detection, Network Security, Distributed Systems, Wireless Network

RESEARCH EXPERIENCES

Online, Context-aware, Intelligent Anomaly Detection and Analysis for SCADA Systems

(Multimedia Operating Systems and Networking Research Group) **Urbana, Illinois, USA**

Research Assistant *June 2017- Present*

- The project aims at designing a framework which monitors the network traffic in SCADA networks, detects anomalous events in real time, and provides context-aware information for those anomalies to guide reasoning and consequences of anomalous events.
- Clustering, machine learning, and Bayesian networks are utilized in the project.

Synchrophasor Data Real-time Compression

(Multimedia Operating Systems and Networking Research Group) **Urbana, Illinois, USA**

Research Assistant *August 2016- May 2017*

- Designed an intelligent synchrophasor data real-time compression framework for wide-area monitoring systems.
- Utilized Principal Component Analysis (PCA) and Discrete Cosine Transform (DCT).
- Used an early disturbance detector to differentiate normal and disturbance data.

Applied Resiliency for More Trustworthy Grid Operation (ARMORE)

(Multimedia Operating Systems and Networking Research Group) **Urbana, Illinois, USA**

Research Assistant *August 2014- May 2017*

- Designed a unique, extensible and efficient operation-level traffic analyzer framework for Smart Grid.
- Used the Bro network security monitor to acquire and built a multi-level statistic structure of all the packets.
- Designed a threshold-based anomaly detection algorithm utilizing the multi-level statistic structure.

PUBLICATIONS

- **Wenyu Ren**, Tim Yardley, Klara Nahrstedt, "EDMAND: Edge-Based Multi-Level Anomaly Detection for SCADA Networks", *IEEE Smart Grid Communications (SmartGridComm)*, October 2018.
- **Wenyu Ren**, Tim Yardley, Klara Nahrstedt, "ISAAC: Intelligent Synchrophasor Data Real-Time Compression Framework for WAMS", *IEEE Smart Grid Communications (SmartGridComm)*, October 2017.
- **Wenyu Ren**, Steve Granda, Tim Yardley, King-Shan Lui, Klara Nahrstedt, "OLAF: Operation-Level Traffic Analyzer Framework for Smart Grid", *IEEE Smart Grid Communications (SmartGridComm)*, November 2016.
- Suleyman Uludag, King-Shan Lui, **Wenyu Ren**, Klara Nahrstedt, "Secure and Scalable Data Collection With Time Minimization in the Smart Grid", *in Smart Grid, IEEE Transactions on , vol.PP, no.99, pp.1-1.*
- Suleyman Uludag, King-Shan Lui, **Wenyu Ren**, Klara Nahrstedt, "Practical and Secure Machine-to-Machine Data Collection Protocol in Smart Grid", *IEEE M2MSec*, October 2014.
- **Wenyu Ren**, Yong Li, Siyu Chen, Depeng Jin, Li Su**, "**Potential Predictability of Vehicles' Visiting Duration in Different Areas For Large Scale Urban Environment", *IEEE WCNC*, April 2013.