Sen (Forrest) Yang

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EDUCATION

Rutgers University, the State University of New Jersey — Piscataway, NJ
• M.S & Ph.D., in Electrical & Computer Engineering, GPA 3.9/4.0, GRE 1510, TOEFL 103 — Sept 2013 - Present

Nanjing University of Posts and Telecommunications, China — Nanjing, China
• B.A., in Communication Engineering, GPA 84/100 — Sept 2008 – June 2012

WORKING EXPERIENCE

Nokia Bell Labs — Murray Hill, NJ
• Data Scientist Intern, Machine Learning Group — May 2017 – Aug 2017

Rutgers University & Children's National Medical Center (CNMC) — Piscataway, NJ & Washington, D.C.
• Research Assistant & Data Scientist — Aug 2014 - Present

Huawei Technologies Co. Ltd. — Shenzhen, China
• •Software Engineer in GSM, LTE network maintenance — Aug 2012 – June 2013

RESEARCH AND PROJECTS

1. Smart Trauma Resuscitation Decision Support System *NIH Project, Rutgers & CNMC*, Aug 2014 - Present
• During trauma resuscitation, multidisciplinary teams rapidly identify and treat potentially life threatening injuries, then develop and execute a short-term management plan for the identified injuries. To improve medical team performance and reduce the adverse outcomes on the patients, we are developing a computerized decision support system for trauma resuscitations and other fast-paced, high-risk critical care settings. The system monitors workflow and alerts users of errors, allowing remedial actions to be taken to prevent adverse outcomes.
• Developed and repair knowledge-based workflow models using data
• Identified and analyze workflow deviations using process mining techniques
• Developed a real-time computerized decision support system that alerts the of medical team of errors

2. Recommender System for Medical Treatment Procedures (VIT-PLA 2.0) *NIH Project ,Rutgers*, Sept 2016 - Present
• Proposed a novel time-warping-based pairwise process trace similarity measure
• Tested state-of-art clustering algorithms and proposed a novel algorithm for deciding the number of clusters
• Proposed a novel algorithm for calculating process cluster prototype
• Designed a regression model for treatment procedure recommendation

3. Workflow Model Mining based on State-Splitting HMM *NIH Project, Rutgers*, Sept 2016 - Present
• Proposed an alignment-based state-splitting HMM algorithm that can significantly speed up the HMM training process
• The workflow model discovered using our State-Splitting HMM algorithm can handle duplicate activities

4. Visual Interactive Tool of Process Log Analysis (VIT-PLA) *NIH Project, Rutgers*, Sept 2015 – Sept 2016
• Built a framework for clustering process traces, finding cluster prototype using trace alignment, and visualizing the results.
• Discovered associations between process clusters and process context attributes using multinomial logistic regression
• Acquired knowledge from cluster prototypes and regression results

5. Sudoku Solver (Java, Java Swing) *Course Project, Rutgers*, Sept 2014 – Dec 2014
• A Java-app to solve Sudoku with backtracking, simulated annealing, dancing links, and a novel algorithm.

6. NBA Game Winner Prediction (Python, SQL**)** *Course Project, Rutgers*, Jan 2014 – May 2014
• Crawled ESPN website for game and player data for each game
• Predicted the winner of each NBA game using different classifiers

7. Web Development for Stock Forecast (PHP, JS, HTML, CSS**)** *Course Project, Rutgers*, Jan 2014 – May 2014
• Collected historical stock data from Yahoo finance
• Predicted stock prices using HMMs, Curve Fitting, and ARMA models

8. Health Monitoring Analytics based on Twitter (Android, Java, MongoDB**)** *Course Project, Rutgers*, Sept 2013 – Dec 2013
• Queried tweets that correlated to health and fitness using Twitter APIs
• Visualized data analytics in an Android app

RECENT PUBLICATIONS

1. Medical Workflow Modeling Using Alignment-Guided State-Splitting HMM
Sen Yang, Moliang Zhou, Shuhong Chen, Omar Ahmad, Ivan Marsic, and Randall S. Burd — 2017 Accepted
Accepted by IEEE International Conference on Healthcare Informatics (ICHI 2017)

2. Evaluation of Trace Alignment Quality and its Application in Medical Process Mining
Moliang Zhou, **Sen Yang**, Xinyu Li, Shuyu, Lv, Shuhong Chen, Ivan Marsic, Richard A. Farneth, Randall S. Burd — 2017 Accepted
Accepted by IEEE International Conference on Healthcare Informatics (ICHI 2017)

3. A Data-driven Process Recommender Framework
Sen Yang, Xin Dong, Leilei Sun, Yichen Zhou, Richard A. Farneth, Hui Xiong, Randall S. Burd and Ivan Marsic — 2017 Accepted
Accepted by 2017 ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (KDD 2017)

4. Automatic Workflow Capture and Analysis for Improving Trauma Resuscitation Outcomes
Sen Yang — 2016 Published
Doctoral Consortium in 2016 IEEE International Conference on Health Informatics (ICHI 2016)

5. VIT-PLA: Visual Interactive Tool for Process Log Analysis
Sen Yang, Xin Dong, Moliang Zhou, Shuhong Chen, Ivan Marsic, and Randall S. Burd — 2016 Published
KDD 2016 Workshop on Interactive Data Exploration and Analytics (IDEA 2016)

6. Duration-Aware Alignment of Process Traces.
Sen Yang, Moliang Zhou, Rachel Webman, JaeWon Yang, Aleksandra Sarcevic, Ivan Marsic, and Randall S. Burd — 2016 Published
Industrial Conference on Data Mining. Springer International Publishing, 2016

7. A Data-driven Intention-aware Process Recommender System: An Application in Trauma Resuscitation
Sen Yang, Xin Dong, Weiqing Ni, Shuhong Chen, Richard A. Farneth, Randall S. Burd and Ivan Marsic — 2017 Submitted
Submitted to IEEE International Conference on Data Mining 2017

8. Deviation Analysis of the Pediatric Trauma Resuscitation Process
Sen Yang, Richard A. Farneth, Rachel Webman, Shuhong Chen, Moliang Zhou, Omar Ahmed, Aleksandra Sarcevic, Ivan Marsic, and Randall S. Burd — In Progress
Will submit to Journal of Biomedical Informatics, Elsevier

DATA VISUALIZATION AND ANALYSIS TOOLS (DEVELOPED AND LEAD BY ME)

VIT-PLA 2.0
• Web-App (http://34.198.151.101/test.html, prototype for testing purposes) — Developed in 2017

Visual Interactive Tool of Process Log Analysis (VIT-PLA)
• JAVA-App (https://forrestyang119.github.io/) — Developed in 2016

RESEARCH INTERESTS

• Data Mining and Knowledge Discovery, Algorithms, Process Mining, Software Engineering in Data Visual Analytics, Deep Learning in Big Data Analytics. (Special focus: Temporal Event Sequences, Process Logs, Workflow Data, Streaming Data)

RELATED COURSES

• Machine Learning, Data Mining, Data Structures & Algorithms, Data Analytics, Software Engineering, Web App Design, Mobile App Design, Computer Architecture, Linear Algebra, Regression Models (Coursera)

TECHNICAL STRENGTHS (SORTED BY PROFICIENCY)

Programming Languages	Java, Matlab, R, Python, JavaScript, Android, Java Swing, C++/C, PHP, JSP, HTML, CSS
Database Systems	MySQL, Oracle SQL Database, Mongo DB, AWS Could SQL, Google Cloud SQL
Data Mining Skills	Data Analysis, Data Visualization, Machine Learning, Deep Learning Process Mining, Web Crawling
Distributed Computing	Hadoop, Spark 2.0
Operating Systems	Win 10, MacOS Sierra, Ubuntu 16
Enterprise Tools	Office (skilled at macros), Eclipse, Pycharm, Matlab, Netbeans, RStudio, Visual Studio, Latex

ADVISORS

Ivan Marsic **(**www.ece.rutgers.edu/~marsic/**)**
Hui Xiong **(**http://datamining.rutgers.edu/**)**

Mentoring Experience
Bowen Pan (graduate student, Software Engineer at ALK)

Jiaqi Guo (graduate student, Software Engineer at Amazon)
Gang Yang (graduate student, Software Engineer at Epic)
Stephen Hoeffner (undergraduate student)
Moliang Zhou (graduate student, PhD candidate at Rutgers)
Mehul Salhotra (undergraduate student, Analyst at Goldman Sachs)
Linan Meng (graduate student, Software Engineer at (Amazon (China)))
Jingsong Yuan (graduate student, Software Engineer at Amazon)
Aditya Shukla (graduate student, Software Engineer at Hitachi Data Systems)
Shuhong Chen (undergraduate student, currently at Rutgers)
Shuyu Lyv (graduate student, Software Engineer at Amazon)
Yichen Zhou (graduate student, Software Engineer at Amazon)
Xin Dong (graduate student, currently at Rutgers)
Shun Ge (graduate student, currently at Rutgers)
Shubhank Varshney (graduate student, currently at Rutgers)
Haiyue Ma (graduate student, currently at Rutgers)
Shiyu Xu (graduate student, currently at Rutgers)
Jingyuan Li (graduate student, currently at Rutgers)
Vancha Verma (undergraduate student, currently at Rutgers)

There are several new students who will join my research team in summer 2017. They are:
Qiyan Wang (1st year master student at ECE Rutgers)
Weiqing Ni (1st year master student at ECE Rutgers)
Yusong wang (1st year master student at ECE Rutgers)
Dawei Wang (1st year master student at ECE Rutgers)
Yifeng Guo (1st year master student at ECE Rutgers)
Xiaoyi Tang (1st year master student at ECE Rutgers)
Himabindu Paruchuri (Undergraduate student at ECE Rutgers)
Yanhao Wang (1st year master student at CS Rutgers)