

Summary

- 8+ years of research experience in data mining in large scale dataset;
- 5+ years of applying and developing experience in machine learning algorithms;
- Hands on experience in data preparation, management and analysis.

Skill Set

- **Modeling and Simulation:** Predictive modeling, stochastic simulation and time series analysis;
- **Programming:** C/C++, Python, R, SQL and Bash in Linux environment;
- **Data Analysis:** Logistic/Linear/Sparse Regression Models, Decision Trees, SVM, Clustering, Feature Selection, *etc.*;

Experiences

- Design Network-based Recommendation Systems** Research Assistant, 2007-2009
 - Developed a network-based recommendation system to predict favorite movies for customers based on their historical purchase and rating data from *Netflix* and *MovieLens*. We further applied it to user scoring system, fraud users detection and tag recommendations.
 - Designed, tested and improved recommendation algorithm, realized demo systems with Matlab, C and MPI; evaluated system performance with respective to accuracy and diversity;
- Analyze Hierarchical Delayed Correlations in Pigeon Flock** Research Assistant, 2009-2010
 - Built a hierarchical leadership model for pigeon flock and analyzed the high resolution trajectories data.
 - Cleaned, visualized and analyzed high-resolution spatiotemporal data of pigeon trajectories using CImg, Matlab; analyzed the delay correlations between time series of pigeon trajectories and built hierarchical leadership model; performed A/B test to compare different models;
- Identify Hidden Variables Using Sparse Regression** Research Assistant, 2011-2015
 - Constructed general framework and software package to systematic analyze high dimensional time series using compressive sensing. We revealed the dynamical functions of response variables, causal direction and weights, and hidden variables from given time series. The framework was applied to neural networks, geospatial networks, evolutionary game/decision on financial networks and dynamical oscillatory networks.
 - Designed and implemented algorithms with Matlab and C; cleaned questionnaire from social network using Matlab and Python; evaluated algorithm performance;
- Model and Predict Synthetic Gene Network Differentiation** Research Associate, 2015-Now
 - Predict cell fate determination and differentiation in synthetic genetic networks with multiple stable steady state. We developed a control framework for nonlinear gene networks, and applied it to control cell fate differentiate;
 - Collected, cleaned and analyzed flow cytometry data; used nonlinear regression to fit optimal parameter sets for Hill functions; built models to predict mutual inhibited gene expressions; performed bifurcation analysis and Monte Carlo simulation to design and predict experimental conditions;

Education

Arizona State University	Ph.D	Electrical Engineering	2011-2015
University of Science and Technology of China	Graduate Student	Theoretical Physics	2008-2010
University of Science and Technology of China	B.S.	Applied Physics	2004-2008

Honors & Awards

- 2015 Chinese Government Award for Outstanding Self-Financed Students Abroad.
This award is issued by Chinese Ministry of Education and recognizes the academic excellence of non-Chinese-government funded Chinese PhD students from all disciplines in 32 countries, including America, UK, German, Japan, Australia and Canada.

Selected Publications

1. LZ Wang, **RQ Su**, ZG Huang, X Wang, W Wang, C Grebogi, YC Lai, "A geometrical approach to control and controllability of nonlinear dynamical networks", **Nature Communications**, 2016.
2. **RQ Su**, YC Lai, X. Wang, Y Do, "Uncovering hidden nodes in complex network in the presence of noise", **Scientific Reports**, 2014.
3. M Wu, **RQ Su**, X Li, T Ellis, YC Lai, X Wang, "Engineering of regulated stochastic cell fate determination", **PNAS**, 2013.
4. T Zhou, LL Jiang, **RQ Su**, YC Zhang, "Effect of initial configuration on network-based recommendation", **Europhysics Letter**. **81**, 2008.