Yongjin James Jiang

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Summary

- Experienced in machine learning, data analytics, and data visualization
- Holder of 30 scientific publications, more than 1000 citations in the field of theoretical physics, and winner of a research leadership award.
- A strategic thinker, a quick learner, and a team player.

Skills

- Machine Learning: *Logistic/Linear Regression, KNN, k-Means, Decision Tree/Random Forest, XGBoost, Restricted Boltzmann Machine, Computer vision, RNN, Natural Language Processing (NLP), Time Series Analysis, Reinforcement Learning, Scikit-learn, Keras, TensorFlow*
- Programming: *Python, R, Spark, MATLAB/Mathematica, JavaScript*
- Databases: *SQL, MongoDB, SQLite*
- Statistics: *Bayesian Network, Hidden Markov Model, EM Method, Markov Chain Monte Carlo*
- Mathematics*:* *Calculus, Linear Algebra, Complex Function Analysis, Group Theory, Green's Function, Kernel Methods, Differential Equations, Topology*
- *Others:* *Data Structures and Algorithms, git/GitHub, Web Scraping, Heroku, Google Cloud Platform, Communication skills, Interpersonal skills, Presentation skills, Fluent in English and Chinese*

Professional Experience

1. Machine Learning and Data Visualization ***2018.8-now***

- Yelp Dataset Challenge 2019

  Based on the Yelp dataset (yelp.com/dataset/challenge), we built a restaurant recommender based on user's past visits and review database of Yelp.
- Deep Reinforcement learning 2019

  Deep Neural Network (DNN) and Reinforcement learning (RL) are recently combined together and generated powerful algorithms to tackle challenging problems. In this project, we work with two algorithms, Deep Q-learning (DQL) and Deep Deterministic Policy Gradient (DDPG) to solve a problem from quantum mechanics.
- Feature selection on Bayesian Network 2019

  The minimum, robust feature set for a chosen target variable in simulated data sets randomly generated in a Bayesian network (or directed acyclic graph) is calculated by linear regression method. Some generic rules to determine the robust feature subset is found.
- Date format translation 2019

  A Neural Machine Translation (NMT) model for date format translation is built. Through this model, an input date (with any format) can be "translated" into a standard, uniformly formatted date. This neural machine learning model was ***trained from scratch*** *with a training set of 10000 pairs of (human readable date, formatted date).*
- D3 data journalism demo 2018

  An interactive data visualization tool is built to display state-level data about population health based on 2014 U.S. Census data. The health risks facing particular demographics of the United states can be found. Three risk factors (obesity, smoking, and un-insurance rates) are plotted against three perhaps underlying factors (income, poverty rate, and age). Features are ***selectable*** *for both x and y axes.*
- Global Earthquake Map demo 2018

  Always collect recent 7 days data about global earthquake, process it, and display it in the visual form of an interactive map. Users can choose different style of the map and get the data about a particular earthquake by a simple click.

2. Modeling and Numerical Simulation of novel materials ***1996.9-2018.7***

RESPONSIBILITIES:

- Propose new or improve existing models to explain experimental data of newly discovered materials, use theoretical models to predict novel effects that can guide further experimental work. Our work involves numerical simulations with Python, MATLAB, and Fortran programing, as well as data analysis by mathematical methods (e.g., group theory) and machine learning algorithms (e.g., linear regression).

KEY ACHIEVEMENTS:

- Published 30 scientific papers with more than 1000 citations. Won a research leadership award. Our modelling & quantitative analysis on black phosphorus and graphene received several hundreds of citations by international colleagues and played some significant academic influence in the field.

Education

- Data Visualization and analytics, University of Minnesota 2018.8-2019.2
- Deep Learning Specialization, Coursera Specialization Certificate 2018.10-2019.2
- Ph.D. in Theoretical Physics, Fudan University (Top 5 universities in China), P. R. China 2002.7
- MS in Theoretical Physics, Suzhou University, P. R. China 1999.7
- BS in Applied Physics, Ningbo University, P. R. China 1996.7

Selected peer-reviewed journal publications

1) **Yongjin Jiang**, Rafael Roldán, Francisco Guinea, Tony Low, *"Magneto-electronic properties of multilayer black phosphorus", Phys. Rev. B.92*, 085408 (2015). **38** citations.
2) Tony Low, **Yongjin Jiang**, Francisco Guinea, "*Topological currents in black phosphorus with broken inversion symmetry*", *Phys. Rev. B.92*, 235447 (2015). **20** citations.
3) Tony Low, A. S. Rodin, A. Carvalho, **Yongjin Jiang**, et al., "*Tunable optical properties of multilayer black phosphorus thin films*", *Phys. Rev. B* 90, 075434 (2014). **458** citations.
4) **Yongjin Jiang**, Tony Low, Kai Chang, M. I. Katsnelson, and F. Guinea, "*Generation of pure valley current in graphene*"**,** *Phys. Rev. Lett.110*, 046601 (2013). **170** Citations.
5) Jifa Tian, **Yongjin Jiang,** et al., "*Quantum Hall Effects in Monolayer-Bilayer Graphene Planar Junctions*", *Phys. Rev. B.88*, 125410 (2013). **24** Citations.
6) Tony Low, **Yongjin Jiang**, et al., "*Electron pumping in graphene mechanical resonators*"，*Nano Lett.12* (2), pp 850–854(2012). **39** Citations.
7) **Yongjin Jiang**, Feng Lu, Zhaifeng, Tony Low, JiangPing Hu, "*Connectivity of edge and surface states in topological insulators*", *Phys. Rev.B.84*, 205324 (2011). **9** citations.
8) **Yongjin Jiang**, Daoxin Yao, et al., "*Andreev conductance in the d+id' superconducting states of graphene*", *Phys. Rev. B.77*, 235420 (2008). **57** citations.
9) **Yongjin Jiang** and Liangbin Hu, "*Kinetic magnetoelectric effect in a two-dimensional semiconductor strip due to boundary-confinement-induced spin-orbit coupling*", *Phys. Rev. B. 74*, 075302(2006). **49** citations.
10) **Yongjin Jiang,** "*Nonequilibrium spin polarization effects in a spin-orbit coupling system and contacting metallic leads*", *Phys. Rev. B. 74*, 195308 (2006); **18** citations.
11) **Yongjin Jiang,** Ruibao Tao, "*Numerical study of two-state random model of decoherence in nano-spin system*", *Chinese Phys Lett.19,*1002 (2002).
12) **Yongjin Jiang**, Daosheng Deng, and Ruibao Tao, "*Evidence of stripe formation tendency in t-J model*". *Physica C. 377*, 85(2002).

Honors/Awards/Certificates

- Award for Distinguished publication during the 2005-2010 period in ZheJiang Province, P. R. China, 2012
- Academic leadership for young and middle-aged scientists in ZheJiang province, P. R. China, 2013
- Data Visualization and analytics, Trilogy Education at University of Minnesota, 2019
- Deep Learning Specialization,
- Kaggle R Tutorial on Machine Learning,
- Time Series Analysis in Python,
- Software Engineering for Data Scientists in Python
- Machine Learning with PySpark
- Analyzing Business Data in SQL