Jin Shang

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EDUCATION

Carnegie Mellon University - School of Computer Science   Pittsburgh, PA
Master of Science in Computer Science   Aug 2019 - Dec 2020
- **Selected Courses**: Intro to Computer Systems, Distributed System, Database System, Machine Learning for PhD

New York University Abu Dhabi   Abu Dhabi, UAE
Bachelor of Science in Mathematics and Computer Science, 3.90/4.00   Aug 2015 - May 2019
- **Selected Courses**: Algorithm, Computer Networks, Computer Security, Data Structure, Math Modeling, Numerical Methods, Operating Systems, Software Engineering, Statistics, Theory of Computation

INTERNSHIP EXPERIENCE

Tencent Technology, WeChat Group   Shenzhen, China
Software Engineering Intern, WeChat Data Center   Jun 2019 - Aug 2019
- Programmed a sparse vector template class that supports operations in parallel computing using C++ STL and OpenMP.
- Developed a real-time recommendation algorithm for WeChat Top Stories based on FTRL-Proximal online learning algorithm with C++; tested with WeChat's SvrKit RPC framework with 5ms training time per post and 97.4% accuracy.
- Designed and implemented a feature engineering toolkit with Scala for Apache Flink that facilitates feature selection, concatenation, labeling and formatting, compatible with all major data formats supported by Apache Flink and JSON.
- Replaced WeChat's batch-learning algorithm with the new feature toolkit and online recommendation algorithm; reduced total processing time by over 90% for each post, resulting in 30% more user clicks within the first month of deployment.

PROJECTS

Distributed BitCoin Miner   CMU | Sep 2019 - Present
- Developing Live Sequence Protocol (LSP), a transport protocol that provides a reliable client-server communication model.
- Implementing a scalable distributed BitCoin miner system with LSP, enabling collaboration between unlimited coin miners.

Discrete Simulator of Continuous Logistic Chaos System   NYUAD | Oct 2018 - Dec 2018
- Designed a simulator for discrete Logistic Chaotic Map given arbitrary number of bits for float representation with Numpy.
- Simulated computer's capability of representing non-recurring chaos limited by its finite representation of real numbers.

Course Equivalence Detector for NYU Global Campuses   NYU | Apr 2018 - May 2018
- Developed a web scrapper to extract course information of 40,000 NYU courses across 14 global sites with Python Scrapy.
- Generated word frequency vector for courses and detected similarity using TF-IDF and Naive Bayes with 85% accuracy.
- Wrote an interactive program that outputs top equivalent courses at other NYU campuses for any course in real time.

RESEARCH EXPERIENCE

Computer Aided Study of Abstract Algebraic Structures   NYUAD | Sep 2017 - May 2019
- Designed an $O(n^2)$ algorithm for computing roots and homology of nilpotent Lie algebra with Mathematica and SuperLie.
- Computed for the first time Duflo-Serganova functors and double extensions of several Lie algebras with the new algorithm.

Cognitive Transmission Mechanism for Wireless IoT Sensors   NYU | Jun 2018 - Aug 2018
- Designed and proved an optimal mechanism of data transmission for micro Internet of Things devices with limited battery, memory and computational power using dynamic programming on battery level and expected sensor operating lifetime.
- Tested proposed optimal algorithm which reduces power consumption by over 50% while gaining 3 times more utility.

SELECTED PAPERS

Jin Shang, Muhammad Junaid Farooq, Quanyan Zhu. "Real-Time Transmission Mechanism Design for Wireless IoT Sensors with Energy Harvesting under Power Saving Mode", under review by *IEEE Internet of Things Journal.*

Sofiane Bouarroudj, Dimitry Leites, **Jin Shang**. "Computer-aided study of double extensions of restricted Lie superalgebras preserving the non-degenerate closed 2-forms in characteristic 2", *Accepted to Experimental Mathematics.*

Sofiane Bouarroudj, Dimitry Leites, Alexander Lozhechnyk, **Jin Shang**. "The roots of exceptional modular Lie superalgebras with Cartan matrix", *Accepted to Arnold Mathematical Journal.*

SKILLS

Programming Languages: *C/C++, Python, GoLang, Mathematica, Scala, SQL*

Libraries and Tools: *Numpy, Scipy, Matplotlib, Apache Flink, Maven, PyTorch*