# Dixing Xu **Dex**

Deep Learning Researcher · Blockchain Developer

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*"Felix, qui potuit rerum cognoscere causas."*

## Education

**Xi'an Jiaotong-Liverpool University** — *Suzhou, China*

B.S. in Information and Computing Science — *2015 - 2020*

**University of Liverpool** — *Liverpool, UK*

B.S. in Information and Computing Science — *2015 - 2020*

## Experience

**National University of Singapore** — *Singapore*

Summer Internship at NUS — *Jun. 2016 - July 2016*

- working with **Prof. Hon Wai Leong** on course: Computational Thinkning and Community Detection in Large Graphs

**Xi'an Jiaotong-Liverpool University** — *Suzhou, China*

Summer Undergraduate Research Fellowships — *Jun. 2017 - Aug. 2017*

- Implemented *Style Transfer for Anime Sketches with Enhanced Residual U-net and Auxiliary Classifier GAN* in PyTorch

**Research Institute of Big Data Analytics, Suzhou** — *Suzhou, China*

Student Member — *Nov. 2016 - July. 2018*

- Teaching Assitant of Internet of Things (IoT) courses
- Volunteer at International Conference on Big Data Analytics and Business Intelligence

**Linux Foundation** — *Remote*

Summer Intern (Part-time) — *Jun. 2018 - Nov.2018*

- Hyperledger Fabric Python SDK

**Research Institute of Beihang University, Suzhou** — *Suzhou, China*

Blockchain Software Developer/Research Assistant — *Oct. 2018 - PRESENT*

- Develop course on blockchain
- Application Development based on Hyperledger Fabric

**Nanyang Technological University** — *Singapore*

Research Assistant — *Mar. 2019 - Aug. 2019*

- supervised by **Prof. Tan Rui**
- published papers on deep learning, internet of things & privacy

**Zhejiang University** — *Hangzhou, China*

Research Assistant — *Sep. 2019 - PRESENT*

- supervised by **Prof. Cheng Peng**

## Honors & Awards

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|---|---|---|
| Nov 2017 | **1st Prize**, HACK x FDU | *Shanghai, China* |
| Apr 2018 | **2017 IBM Student Innovation Lab Program Award**, IBM GCG University Partnership | *Shanghai, China* |
| Jun 2018 | **2nd Prize**, 2018 XJTLU & PNP AI Innovation Hackathon | *Suzhou, China* |
| Jul 2018 | **3rd Prize**, DoraHacks x BCH Faith Hack | *Beijing, China* |
| Jul 2018 | **3rd Prize(Personal)**, 2018 EOS "Youzi" Hackathon Hangzhou | *Hangzhou, China* |
| Jul 2018 | **1rd Prize(Team)**, 2018 EOS "Youzi" Hackathon Hangzhou | *Hangzhou, China* |
| Sep 2018 | **Special Prize by Qtum ($10,000)**, 2018 Wangxiang Blockchain Hackahton | *Shanghai, China* |

# Publication

### A Deep Reinforcement Learning Framework for the Financial Portfolio Management Problem

*under reivew (Citations ~40)*

Zhengyao Jiang, Dixing Xu, Jinjun Liang *[view on arxiv: 1706.10059]*

- Financial portfolio management is the process of constant redistribution of a fund into different financial products. This paper presents a financial-model-free Reinforcement Learning framework to provide a deep machine learning solution to the portfolio management problem. The framework consists of the Ensemble of Identical Independent Evaluators (EIIE) topology, a Portfolio-Vector Memory (PVM), an Online Stochastic Batch Learning (OSBL) scheme, and a fully exploiting and explicit reward function. This framework is realized in three instants in this work with a Convolutional Neural Network (CNN), a basic Recurrent Neural Network (RNN), and a Long Short-Term Memory (LSTM). They are, along with a number of recently reviewed or published portfolio-selection strategies, examined in three back-test experiments with a trading period of 30 minutes in a cryptocurrency market. Cryptocurrencies are electronic and decentralized alternatives to government-issued money, with Bitcoin as the best-known example of a cryptocurrency. All three instances of the framework monopolize the top three positions in all experiments, outdistancing other compared trading algorithms. Although with a high commission rate of 0.25% in the backtests, the framework is able to achieve at least 4-fold returns in 50 days.

### Challenges of Privacy-Preserving Machine Learning in IoT

*AIChallengeIoT'19*

Mengyao Zheng, Dixing Xu, Linshan Jiang, Chaojie Gu, Rui Tan, Peng Cheng *[view on arxiv: 1909.09804]*

- The Internet of Things (IoT) will be a main data generation infrastructure for achieving better system intelligence. However, the extensive data collection and processing in IoT also engender various privacy concerns. This paper provides a taxonomy of the existing privacy-preserving machine learning approaches developed in the context of cloud computing and discusses the challenges of applying them in the context of IoT. Moreover, we present a privacy-preserving inference approach that runs a lightweight neural network at IoT objects to obfuscate the data before transmission and a deep neural network in the cloud to classify the obfuscated data. Evaluation based on the MNIST dataset shows satisfactory performance.