

# Wenkai Jiang

MASTER BY RESEARCH STUDENT · COMPUTER SCIENCE

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## Experience

### National University of Singapore

Singapore

RESEARCH ASSISTANT

March 2017 - August 2017

- Accelerated deep neural networks (DNNs) training with compressed models
- Used machine learning models (Bayes/Decision Tree/Clustering) to extract the most informative training data points
- Designed logarithmic quantization techniques to reduce communication overhead

### The University of Melbourne

Melbourne, VIC, Australia

TUTOR

February 2016 - October 2016

- COMP10002 Foundations of Algorithms 2016, 2018: taught basics of C to undergraduates
- COMP90041 Programming and Software Development 2016: taught basics of Java and software engineering to postgraduates
- COMP20005 Engineering Computation 2016: taught basics of C and engineering computing algorithms to undergraduates

### Technology Lab, Accenture

Beijing, P.R.China

RESEARCHER & SOFTWARE ENGINEER INTERN (MANAGER: DR. YAN GAO)

January 2015 - June 2015

- Analyzed users' activities and often-visited areas based on trajectories extracted from mobile phone data (GPS)
- Implemented a storage system (PostgreSQL/PostGIS) for geographical information up to 2 billion points of interest in Beijing, Singapore and London
- Designed an online recommending system that recommends points of interest around users to them based on their visiting history

### The University of Melbourne

Melbourne, VIC, Australia

RESEARCH ASSISTANT (SUPERVISOR: A/PROF. RUI ZHANG)

July 2014 - October 2014

- Extracted text from various scenes of real life using optical character recognition (OCR) technique
- Designed a text recognition pipeline for extracting, cleaning, detecting, and recognizing text in scenes with complex background
- Built a face recognition system that achieves high accuracy for portrait images crawled from web pages

## Education

### The University of Melbourne

Melbourne, VIC, Australia

MASTER BY RESEARCH STUDENT IN COMPUTER SCIENCE (DEEP LEARNING AND DISTRIBUTED DATA PROCESSING)

September 2015 - PRESENT

- Recipient of Full Fee Remission and Living Allowance Scholarships (MIFRS and MIRS)
- Dissertation topic: Highly Efficient Distributed Hypergraph Analysis: Real-time Partitioning and Quantized Learning
- Improved the efficiency of distributed data processing techniques by orders of magnitude
- Published paper in top-tier peer review journal (TKDE)
- Served as reviewer for leading academic venues including IEEE TKDE, IEEE TCC, and IEEE/ACM ASONAM

### Tsinghua University

Beijing, P.R.China

B.E. IN AUTOMATION

September 2011 - July 2015

- GPA 86.7/100
- Excellent Bachelor's Thesis in the Department of Automation, top 5%
- Excellent graduate in the Department of Automation, top 30%

## Projects

### Life Quality Prediction

Melbourne, Australia

ERNEST & YOUNG NATIONAL DATA SCIENCE CHALLENGE

May 2018

- Ranked 2nd among five finalists (374 participants); Awarded 2500AUD
- Predicted the life quality of different countries in the world using root-mean-square-error as training target
- Built up a two layer model to achieve the best result in the leaderboard where the first layer is a combination of classifiers including decision tree, random forest, SVM, CNN, and xgboost; the second layer is just another xgboost

### University Rankings and Web Inquiries System

Melbourne, Australia

THE UNIVERSITY OF MELBOURNE

July 2016 - December 2016

- Crawled university rankings from sources including US news, QS, Times, and ARWU etc.
- Developed a fuzzy search engine for university name inquiries using edit distance and N-gram
- Front-end development using javascript (bootstrap, Node.js, and Angular), CSS, and HTML
- Back-end database support using MongoDB

## Emotional Analysis in Film Reviews

THE UNIVERSITY OF MELBOURNE

Melbourne, Australia

March 2016 - May 2016

- Trained and classified reviewers' emotions in film reviews using word embedding and other classifiers
- Cleaned and modified the typos in reviews using edit distance and N-gram

## User Activities Analysis: Prediction and Recommendation

TECHNOLOGY LAB, ACCENTURE

Beijing, P.R.China

January 2015 - June 2015

- Used Hidden Markov Model to depict users' GPS trajectories
- Identified the patterns lied behind users' trajectories using machine learning techniques (similarity analysis through clustering and classification)
- Managed spatial map data records using PostgreSQL and PostGIS

## Text and Face Recognition

THE UNIVERSITY OF MELBOURNE

Melbourne, Australia

July 2014 - September 2014

- Recognized texts and faces in complex scenes using feature selection, boosting and DNN (Caffe)
- Extracted texts and faces from background using image segmentation techniques (clustering and bounding box)

## Peer-to-peer (P2P) Online Chat Application

TSINGHUA UNIVERSITY

Beijing, P.R.China

October 2013 - December 2013

- Developed a client/server chat application in Java using TCP protocol and socket
- One-on-one and one-to-many chatting is a peer-to-peer (P2P) communication without intervention of server

## Self-service Payment Machine

TSINGHUA UNIVERSITY

Beijing, P.R.China

July 2012 - August 2012

- Front-end operation interface design using visual C/C++ and MFC
- Back-end database design using PHP and MySQL
- Implemented password login verification module, commodity warehousing and sold inventory update module, customer shopping and payment module, and promotion and member points module

## Car Racing Game on Android

TSINGHUA UNIVERSITY

Beijing, P.R.China

March 2012 - May 2012

- Based on Android, implemented in Java
- Implemented AI to dynamically set obstacles according to users' actions
- Developed score ranking system for different players

## Publication

### HyperX: A Scalable Hypergraph Partitioning and Learning Framework

COLLABORATE

February 2016 - February 2018

- Designed and developed a novel distributed framework for efficient and effective hypergraph learning and processing
- Tackled challenges of inflated data size, enormous replication cost, and difficulty in balancing distributed workloads
- Implemented in Scala on Spark, which is orders of magnitude faster than Spark's GraphX
- This work has been published on IEEE TKDE journal

## Honors & Awards

### SCHOLARSHIPS

2015	<b>MIFRS and MIRS</b> , Recipient of Full Fee Remission and Living Allowance Scholarships	Australia
2015	<b>MIEA</b> , Recipient of Melbourne International Engagement Award	Australia
2014	<b>3500USD</b> , Scholarship for excellent undergraduate student to study abroad awarded by China Scholarship Council	Beijing, P.R.China
2014	<b>500USD</b> , Scholarship for excellent performance in academic	Beijing, P.R.China

## Skills

<b>Speciality</b>	Python (Scikit-Learn/Pandas/Numpy), Spark, Tensorflow, Deep Learning (CNN/RNN), Data Mining
<b>Knowledgeable</b>	Java, C/C++, Javascript (Node.js/Angular/Vue/Jquery), CSS, HTML, MySQL/MongoDB/Redis, Linux/Git, Matlab
<b>Exposure</b>	Android, PHP, AWS, D3, Tableau
<b>Communication</b>	English (Superior, 79+ in L/S/W/R of PTE test), Chinese Mandarin (Native Speaker)