Haoxuan Che

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EDUCATION

Northwestern Polytechnical University (NPU), School of Software and Microelectronics

Major: Bachelor of Engineering in Software Engineering Sep. 2015 – Jun. 2019 (expected)

General GPA: 87.0/100 **Major GPA:** 89.8 /100 **Overall Rank:** 2/252

Honors: The National Scholarship, Selected Rate: Top2% (2016-2017, 2017-2018)

The First-Class Scholarship in NPU, Selected Rate: Top10% (2016-2017, 2017-2018)

The "Shenfei" Scholarship for Outstanding Student, Selected Rate: Top1 (2015-2016)

SELECTED AWARDS

The Second Prize in the ASC18 Student Supercomputer Challenge, 24/331	Apr. 2018
The First Prize & Application Innovation Award in the ASC17 Student Supercomputer Challenge, 1/230	Apr. 2017
The First Prize in the National College Students Mathematics Modeling Competition, Top 0.88%	Nov. 2017
The Excellent Paper Award for the National College Students Mathematics Modeling Competition, 12/33062	Nov. 2017
The Honorable Mention for the Mathematical Contest in Modeling (MCM/ICM)	Mar. 2017

RESEARCH INTERESTS

Artificial Intelligence, Machine Learning, Computer Vision and Natural Language Processing

RESEARCH EXPERIENCES

OPTIMAL Lab –Northwestern Polytechnical University

Research Assistance, ***Advisor: Prof. Feiping Nie***

Research on Fast Approximate K - Nearest Neighbors (In progress) Mar. 2018 – Present

- Proposed a fast-approximate K-nearest neighbors (KNN) method based on tree strategy and balanced K-means clustering to improve the performance and speed of approximate K-nearest neighbors search.
- Completed experiment, and used a theorem in convex optimization to explain why balanced K-means tree performed so well in finding the nearest neighbors.

Multi-Label Clustering Based on Fuzzy Logic for Scene Classification Oct. 2017 – Feb. 2018

- Made a multi-label extension for clustering based on fuzzy logic raised in single-label clustering research to solve multi-label tasks.
- Proposed two mechanisms named threshold approximation and Review and Self-Correction (RSC) to improve the performance of multi-label clustering model proposed.

INTERNSHIP

Huawei Xi'an Research Institute

Intern, ***Advisor: Dr. Hong Liu***

Research and Application of Cluster Retrieval and Acceleration Technology Jul. 2018 – Sep. 2018

- Completed the research of the state-of-the-art algorithms related to fast KNN, compared with the Top3 algorithms and provided its test benchmark in work report.
- Designed the KNN algorithm based on segmentation which means that using the reasonable-organized tree structure to decrease the data in which needs to be searched; improved this algorithm and realized it in MATLAB.
- Migrated the code from MATLAB to C++ on Linux, and carried out large-scale data experiments.
- Tested the algorithm, and got a good result in the face recognition project.

SELECTED COMPETITION & PRACTICAL PROJECTS

Intelligent Teaching Case Selection System Sep. 2017 – Jan. 2018

- Designed the system modules, and took responsible for the core module, the machine learning algorithms development.
- Self-learned natural language processing technique, and did feature extraction.
- Used the Bayesian classifier (Laplacian correction) to do classifying.
- Updated score data based on feedback from teachers and students, to improve the overall performance of this system.

Task-Pricing Program of "Photo Shoot Profit" Based on Game Theory Oct. 2017

Solution of question B in National College Students Mathematics Modeling Competition

- Introduced incomplete information game theory into the pricing issue, and used the linear price method to give an equilibrium solution.
- Received the first prize and an excellent paper award in this competition, and our paper was accepted in Chinese Journal of Engineering Mathematics.

Traffic Prediction using Deep Learning Apr. 2017

Solution of ASC Student Supercomputer Challenge 2017

- Designed a new neural network, inspired by Spatio-Temporal Residual Networks using temporal and spatial information.
- Implemented the prediction model, did experiment and elaborated the relationship between the prediction results and the combination of the spatial and time information from the traits of the proposed model.
- Won the first prize and an application innovation award in this competition.

Disease and Non-Coding RNA Association Prediction based on Deep Learning Oct.2016 – Jan. 2017

- Self-learned Python and TensorFlow, and completed the RNN model to train and predict the relationships between the non-coding RNA and disease.
- Implemented the RNN prediction model and algorithm, assisted Prof. Jianyu Shi to develop the relevant theory.

PUBLICATIONS

[1] Wei Zheng, Yutong Bai, **Haoxuan Che***. *A Computer‐assisted Instructional Method based on Machine Learning in Software Testing Class.* Computer Applications in Engineering Education 26.5 (2018): 1150-1158. https://onlinelibrary.wiley.com/doi/full/10.1002/cae.21962

[2] Yuandong Li, **Haoxuan Che**, Xinyu Hou. *Task-pricing Program of "Photo Shoot Profit" Based on Game Theory.* Chinese Journal of Engineering Mathematics, Vol.34 Supp.1 (2017): 125-130.

[3] Feiping Nie, **Haoxuan Che**, Xue-long Li. *Multi-Label Clustering Based on Fuzzy Logic for Scene Classification.* (Manuscript)

SKILLS

Programming Language: Skilled in: Java, C/C++, MATLAB, Python, LaTeX
Familiar with: JavaScript, HTML, PHP, SQL

Framework & Platform: IntelliJ, PyCharm, Visual Studio 2015, Linux
PyTorch, TensorFlow, Caffe, PaddlePaddle, CNTK

EXTRACURRICULAR ACTIVITIES

Regiment Secretary, the League Branch of Class 05011501, NPU Dec. 2015 – Dec. 2017

Head, the National E-commerce Competition on "Innovation, Creativity and Entrepreneurship", NPU Dec. 2015 – May. 2016

Volunteer, the 11th China Art Festival in Xi'an Venue, Province of Shaanxi Oct. 2017 – Oct. 2017

Volunteer, the Science Camp in College for Teenagers Jul. 2016 – Aug. 2016