# Cheng Zhong

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## Education

**School of Data Science**, Fudan University — GPA : 3.59/4.0 Top 15% — 2018 - 2020 — *Shanghai, China*

**Deep Learning Summer School**, University of Southern Denmark — 2018.8 — *Odense, Denmark*

**School of Life Science**, Fudan University — GPA : 3.35/4.0 Top 25% — 2016 - 2018 — *Shanghai, China*

## Awards

2019 **Top 2% in TMDB Box Office Prediction (Rank 28 among 1,400 teams)** *Kaggle*

2018 **Fosun Pharma Scholarship (Top 5%, Academic award)** *Fudan University*

2017,2019 **Scholarship for Outstanding Undergraduate Students (Top 10%, Academic award)** *Fudan University*

2018 **Honorable Mention** *MCM/ICM*

## Positions of Responsibility

Nov. 2017 - Apr. 2018 **Leader** iGEM team of School of Life Sciences *Fudan University*

## Key Courses

**Computer Science** Artificial Intelligence ( A ), Principles of Computer ( A ), Database Design and Implementation ( A- )

Python Programming ( A ), Natural Language Processing ( A ), Data Structure ( A )

## Research Experience

### Image reconstruction experiment of AutoEncoder and U-Net

*Shanghai, China*

Researcher — *Jul. 2019 - Dec. 2019*

- **Advisor:** Prof. Xiahai Zhuang, School of Data Science, Fudan University
- **Goal:** Reconstruction and Denoising of incomplete segmented images generated by U-Net
- The LGE MRI used in the study consists of 20,405 2D slices from 45 patients, I first generate the inaccurate segmented results through the U-Net network, and then try to correct them with AutoEncoder. In order to improve the reconstruction accuracy, I use the fully connected layer to add spatial information, try different type of encoder and decoder and design the unique loss function for the network. The DSC of reconstructed image can reach 0.77, while U-Net result just can reach 0.76, and the Network has a good denoising effect.

### Evaluation of Globin-Zero Gold Standard rRNA Removal Kit

*Shanghai, China*

Researcher — *Nov. 2017 - Dec. 2017*

- **Advisor:** Prof. Leming Shi, School of Life Science, Fudan University
- **Goal:** Test whether a new rRNA removal kit can achieve the effect claimed in the instruction manual
- I use the FastQC, FastQscreem and other technologies to detect the genomic samples processed by the removal kit, and then sign the Globin rRNA sequence in total sequence thought R language. Finally, I find that most of the samples can reach the level of removal claimed by the kit, and one of the sequence sample is contaminated.

## Projects

### Minimax search $\alpha$-$\beta$ pruning algorithm for Gomoku

Project Leader — *Dec. 2019*

- **Goal:** Design a fast and effective search algorithm for Gomoku playing
- We use MCTS and Minimax search with $\alpha$-$\beta$ pruning algorithm for Gomoku and add the threat space algorithm to directly find those high-threat points in order to save search time. The pruning algorithm can reach the chess power of pisq7, which won the 24th place in the Gomoku AI Contest 2015

### Knowledge-Based Commonsense Validation via Graph Convolutional Networks

Researcher — *May 2019*

- We proposed a knowledge based commonsense validation model using graph convolutional network. In addition to adding an open source knowledge graph, we also added an explanation about common sense. From the experimental results, this makes the model better understand the meaning of this common sense.