Andrew Guan

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EDUCATION

Shandong Normal University **09 2017 – 07 2021**
*Bachelor - **CGPA - 3.67*** *Jinan, China*

Beijing University of Posts and Telecommunications **09 2021 – now**
Studying deep learning and multi-modal machine learning *Beijing, China*

PROJECTS

Needle | Deep Learning Framework **oncoming**

- Using high-level high-dimensional array API to implement common operators and operators **automatic differentiation**.
- Implement common neural network modules using operators. (Such as Linear, BatchNorm, LayerNorm..); Implement **SGD and Adam** optimizer; Implement a simple **MLP-Residual** model.
- Using C++ and cuda to implement high-dimensional array API to support CPU and GPU. Implement complex convolutional neural networks and transformers. **To be done**

Dmalloc | Memory Mistakes Detection **10 2022**

- Implement the detection of **memory release failure, double-free, out-of-bounds write, and memory leak** in the program.

Vunmo | Multi-Thread CS-Model **10 2022**

- The implementation of bank deposit, withdrawal, transfer and collection businesses based on **multi-thread**. 1. A **synchronization queue** is implemented using a **condition variable**. 2. A **thread pool** is used to process and respond to customer requests.

Nand to Tetris | Basic Computer Science Concept **02 2020**

- Starting from the **Nand** gate, the logic gates **and, or, neg, exclusive OR** are built. The basic logic gate circuits are used to build **PC, ALU, registers, CPU and main memory**, and then these components are connected into a working computer. Based on this hardware platform, **assembler, virtual machine and compiler** are built, and a simple **operating system** is implemented.

Deep Incomplete Multi-Modal Clustering System | Deep Learning **07 2021**

- Using paddlepaddle to reproduce the CDIMC-net which is a model used to do incomplete multi-view clustering. Two main parts are autoencoders and self-paced clustering module.

EXPERIENCE

Google Summer of Code (ML4SCI Organization) **06 2022 – 09 2022**
Contributor *remote*

- **Establish the model Base Line:** use Resnet18 to establish the dark matter mass regression model, and further explore the performance of XResnet and XResnetHybrid on the data set.
- **Research on dark matter mass regression using Transformer:** build Transformer regression pipeline to explore the performance of different Transformer variants.
- **Study the hybrid-model of CNN and Transformer for dark matter mass regression:** use CNN-T and CvT-13 for regression.

RDGC Network for Incomplete Multi-view Clustering) **12 2021 – 04 2022**
Collaborators *Beijing, China*

- **Algorithm implementation:** implement robust graph contrastive representation learning module
- **Experiment:** parameter analysis and ablation experiment

TECHNICAL SKILLS

Languages: Python, Java, C, SQL

Frameworks: Numpy, Pandas, Matplotlib, Pytorch, Scikit-learn, Tensorflow

Technologies: Linux, GitHub, Git,