Changpeng Yang

Web: kelper.cn | Mobile: (+86)18518981828 | Email: thkelper@outlook.com

EDUCATION EXPERIENCES

Peking University **Beijing, China**
Master of Mechanics, Cell Mechanics Lab *Sep. 2021 – June 2024 (Expect)*

- **Key Courses:** Machine Learning, Cell Mechanics, Multi-omics Artificial Intelligence Methods.

University of Shanghai for Science and Technology **Shanghai, China**
Bachelor of Information Management and Information System *Sep. 2016 – June 2020*

- **Key Courses:** Management Science, Operating System, Data Structures and Algorithms, Computer Network.

RESEARCH INTERESTS

- **Computer Vision Algorithms for Cellular Image Analysis:** Focusing on creating and refining algorithms to interpret cellular imaging data, aiding in biological research.
- **Multi-Omics Data Analysis with Deep Learning:** Utilizing AI techniques to dissect large-scale biological data from multi-omics reveal complex biological dynamics.
- **Lab Automation and High-Throughput Drug screen:** Merging cutting-edge automation equipment and artificial intelligence tools to enhancing the efficiency and precision of experimental workflows.
- **LLM-Agent Integration for Biological Research:** Combining LLM to develop agent models that integrate the above tools to empower research in the biological field.

RESEARCH EXPERIENCES

Institute of Biomaterials, Chinese Academy of Science **Wenzhou, China**

Background: Learn wet lab experiments from scratch and collect data as an important part of master's thesis.

Visiting Student *Jan. 2023 – Sep.2023*

A high-throughput drug screen system based on deep learning to recognize collagen gel contraction [link]

- Learn cell culture and wet lab related techniques from scratch.
- Devise and implement protocol to validate collagen gel contraction for drug screen.
- Explore semantic segmentation algorithms to improve the efficiency of collagen gel recognition.
- Validate the whole system on range of cells and drugs.
- Patent pending and deeper research exploration.

Peking University **Beijing, China**

Research Assistant *Dec. 2023 – Present*

Multi-omics Data analysis [link]

Task1: Predict one modality from another modality

- **Reconstruct Modality:** Utilize the model to reconstruct source modality, obtaining an encoder that captures modality-shared information.
- **Freeze Encoder:** Freeze the encoder to extracte modality-shared information.
- **Predict Modality:** Using decoder to reconstruct the target modality with the modality-shared information like the central-dogma.

Taks2: Match modality using contrastive pretraining with feature disentanglement.

- **Acquire Encoders:** Employ the same methodology to derive different encoders for various modality.
- **Modality Matching:** Utilize both pretrained encoders for modality matching, employing the analogous framework of the CLIP.

PROFESSIONAL EXPERIENCES

4Paradigm [link] **Beijing, China**

Large Language Model Intern *Nov. 2023 – June 2024(Expect)*

- Investigate LLMs development in different fields.
- Develop an auto assistant to facilitate prompt engineering.
- Analyze raw data characteristics and construct a high-quality corpus.
- Initially finetune a large language model for a specific domain, followed by ongoing enhancements to continuously improve performance.

4Paradigm **Beijing, China**

Computer Vision Intern *June 2022 – Dec. 2022*

Project1: Image Segmentation Algorithm for Image Tampering Region Recognition.

- Dynamically create a substantial amount of data engineering for training the model.
- Enhance model performance based on the idea of several SOTA models.

Project2: Content Based Image Retrieval

- Based on lightweight vision transformer model do backbone as image content extractor.
- Implement Image retrieval by contrast learning based on Siamese network.

HONORS AND AWARDS

Hongcai Scholarship, Peking University *Sep. 2022*

Outstanding Graduate, University of Shanghai for Science and Technology *June 2020*

Outstanding Student, University of Shanghai for Science and Technology *June 2019*

Outstanding Volunteer, University of Shanghai for Science and Technology *June 2018*

EXTRACURRICULAR ACTIVITIES AND ACHIEVEMENTS

Project manager of You & Me, A Public Benefit Program on Spiritual Accompaniment. *Sep. 2017 –Sep. 2019*

Leader of Summer Volunteer Teaching Team. *July 2018 –Sep. 2018*

Enactus Social Enterprise Competition: First Prize in the East China Competition, Third Prize Nationally. *Sep. 2019*

China University Business Elite Challenge: National first place award. June *2019*

SKILLS AND CERTIFICATIONS

Skills: Web Lab Skills, Python, Pytorch/Lightning, MMCV Series, LangChain, OpenCV, C++, Matlab.

Language: Chinese(Native), English(IELTS 6.5).

Interests: Volunteering, Photography, Cycling.