Zhenyu Huang

Education

Sun Yat-Sen University(SYSU, Project 985 University in China)   *Sep. 2019 – Jun. 2023*

BS in Physics, School of Physics and Astronomy

Major GPA:3.8/4.0   **WES GPA**: 3.61/4.0;   **Numeric GPA**: 87/100

Academic Awards: University Scholarship Earner for Two Consecutive Years.

Core Course: *Computational Physics; Thermodynamics and Statistical Physics; Quantum Mechanics; Atomic Physics; Programming in Physics and Astronomy; General Relativity; Methods in Mathematical Physics*

Research Experience, Publications

Transformer in Galaxy

First Author, Advisor: *Prof. Nicola R. Napolitano*, SYSU   *Mar. 2022 – Sep.2022*

- First author of the paper to explore a study of Galaxy Classification Based on the Swin Transformer. The paper has been accepted by 2022 5th International Conference on Computer Information Science and Artificial Intelligence (CISAI 2022), indexed by EI Compendex and Scopus.
- Constructed a Transformer-based model called SwinT Galnet by adding the Swin Transformer block into Galnet, thus introducing the attention mechanism into that traditional model, trying to investigate the improvement of Transformer over CNN in a single Sérsic galaxy model data:
  - Compares Sérsic parameters of SwinT with those of CNN and the parameters trained by Galnet and SwinT Galnet
  - Demonstrates that the Transformer has an improvement by calculating global attention in accuracy over the pure CNN-based network in galaxy parameters regression tasks.
  - Indicates that Transformer has considerable potential in the field of galaxy morphology.
- Undertook assistantship in other projects in Machine Learning to Identify Images of Extragalactic Galaxies of Sun Yat-Sen University.

Thawing k-essence Dark Energy in the Page Space

Research Project Leader, Advisor: *Prof. Zhiqi Huang, SYSU*   *Mar. 2021 – Nov. 2021*

- Led and initiated the project to get a K-essence numerical simulation through Taylor expansion of the analytical solution and its expansion coefficients with a random Gaussian matrix. The project has been finished with a research paper and in the process of writing it for publication.
  - Participated in the study of forward theory and referenced the derivation and explanation of the formula of the paper.
  - Conducted Computer program simulation and later used latex to write reports and reports
  - Applied simulations of the computer-derived evolution of the Hubble constant projected onto the Page model
- Contributed to other projects of Zhiqi Huang Lab

Internship Experience

Data Intern at TFS   *Jul. 2021 – Aug. 2021*

China's Leading Company Specializing in Data Credit Solutions for E-Commerce Supply Chain Finance.

- Worked with the data department on patent registration projects and conducted deep data analysis to facilitate decision-making.
- Partnered with engineers, data scientists, and product managers to understand business use cases, designed and developed solutions, and presented findings.

Professional and Research Skills

Programming Language: C, Python, C++, LaTeX

Software Tools: Vim, VS code, Mathematica., Termius, VMware, ds9, MATLAB, Git