

Gengzhi Yang

 [Genz17](#) |  [Genz17.github.io](#) |  gzyang19@fudan.edu.cn

EDUCATION

Fudan University, China

Sep 2019 - Jun 2023(Expected)

B.S. in Mathematics and Applied Mathematics

RESEARCH EXPERIENCES

ButterflyNet2D: CNN With Fourier Transform Initialization

Sep 2021 - Present

Advisor: [Yingzhou Li](#)

- ButterflyNet2D is a convolutional neural network structure with sparse channel connection. The architectures are inspired by Butterfly algorithms in dimension 2. This special kind of network is especially useful for signal processing and image processing tasks, where CNNs are widely used.
- Manuscript.

Finite Expression Method for PDE Solving through Spectral Method

Aug 2022 - Present

Advisor: [Haizhao Yang](#) and [Chunmei Wang](#)

- For solving time-related PDEs, we re-implemented the original FEX, which is a new methodology that seeks an approximate PDE solution in the space of functions with finitely many analytic expressions, with the spectral method in the time space.

Butterfly Algorithm in Discretization Invariant Learning

Apr 2022 - Aug 2022

Advisor: [Haizhao Yang](#) and [Chunmei Wang](#)

- Under the framework of IAE-Net, a novel deep learning framework based on integral autoencoders (IAE-Net) for discretization invariant learning, we replace the original dense matrix into multi-sparse matrices using Butterfly algorithm for a faster running speed.

Improvment to PINN

Sep 2022 - Present

Advisor: [Yingzhou Li](#)

- Under the framework of physics-informed neural networks, we re-designed how the loss computes - for maintaining a higher accuracy, we specially focus on how to move the nodes that involved in the loss computation process.

TEACHING EXPERIENCES

Teaching Assistant

Calculus, MATH120045.07@Fudan University.

Sep 2022 - Jan 2023

AWARDS

- First prize of Fudan University Undergraduate Freshman Scholarship.
- Second Prize in 2021 Chinese College Student Mathematical Modeling Contest.
- Fudan University Undergraduate Academic Scholarship, 2019-2020, 2020-2021, 2021-2022.
- Third prize of Fudan University Undergraduate Scholarship, 2019-2020, 2020-2021, 2021-2022.
- Been elected in Buqing Su Top-notch Talent Program in Mathematics, 2019-2020, 2020-2021.

SKILLS

Programming MATLAB, Python(Including PyTorch), R, \LaTeX , C.