

Pingyao Feng

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EDUCATION

- **Southern University of Science and Technology (SUSTech)**

Honor Class in Mathematics and Applied Mathematics (Bachelor)

GPA: 3.67/4.0; rank: 13/43

Shenzhen, China

Sep 2020-Jun 2024 (expected)

PAPER

- **Topology combined machine learning for consonant recognition** (First writer, submitted) Available on arXiv: arxiv.org/abs/2311.15210

RESEARCH EXPERIENCES

- **New Adaptive Central-Upwind Schemes for Conservation Laws**

Thesis

Oct 2023-Jun 2024 (expected)

Supervisor: Alexander Kurganov, from College of Science at SUSTech

- **Stepped into numerical methods for nonlinear systems:** Studied different schemes and limiters, tried to develop new adaptive Central-Upwind schemes for conservation laws.

- **Topology combined machine learning for consonant recognition**

Leader

Jun 2022-Jun 2023

Supervisor: Yifei Zhu, from College of Science at SUSTech

- **Classified phonetic data using topological features:** Conducted classification of voiced/voiceless natural sound records, utilizing persistent homology to extract topological features to achieve a accuracy more than 96%.
- **Developed coding and presentation skills:** Engaged in comprehensive programming code design employing Python and Matlab, with regular presentations and discussions to develop, refine, and assess the models.

- **Geometric visualization for moduli spaces of quantum mechanical systems**

Assistant

Jun 2022-Mar 2023

Supervisor: Yifei Zhu, from College of Science at SUSTech

- **Computed and visualized surfaces with singularity arising from condensed matter physics:** Computed distinguished curves of discriminant surfaces of high degree using Mathematica; got acknowledged in their paper.
- **Participated and collaborated in an interdisciplinary exhibition:** Collaborated with technicians to produce 3D-printed models, developing the ability communicate with researchers from diverse interdisciplinary backgrounds.

ADDITIONAL EXPERIENCES

- **iGEM: Engineered P. aeruginosa filamentous phage for biofilm-targeted therapy**

Modeler

Jan 2023-Oct 2023

Supervisor: Liang Yang, from School of Medicine at SUSTech

- **Conducted dry experiment:** Built up quorum sensing and population growth models for Pseudomonas aeruginosa theoretically to measure the feasibility of temperate phage therapy. Our team, SUSTech-MED, eventually got a gold medal in the 2023 competition.

- **Deep learning programming proficiency practice**

Trainee

Jun 2023-Jul 2023

Supervisor: Di Wang, from Computer Science at King Abdullah University of Science and Technology

- **Code Writing:** Get familiar with models and procedures in deep learning, built up Transformer model to predict time series.

- **Seminar on Riemannian geometry**

Lecturer

Sep 2022-Jan 2023

Supervisor: Bochen Liu, from College of Science at SUSTech

- **Presented topics in Riemannian geometry:** Acquired fundament in Riemannian geometry, introduced to topics such as Riemannian matrices, curvature, Jacobi fields, etc.

- **Microbiology lab work-study job**

Assistant

Jun 2022-Aug 2022

Supervisor: Tao Dong, from School of Life Sciences at SUSTech

- **Stepped into the biology laboratory:** Assisted group members to perform laboratory such as preparation of different mediums, cultivation of bacteria, employment of PCR and agarose gel electrophoresis, etc.

- **Seminar on computational topology**

Lecturer

Feb 2022-Jun 2022

Supervisor: Yifei Zhu, from College of Science at SUSTech

- **Introduced to computational topology:** Acquired fundament in computational topology and presented on various topics, for example, the appliance of computational topology inside musical data and deep learning.

CONFERENCES

- **BIMSA workshop on digraph topology and GLMY theory** (Nov, 23, 2023 - Nov, 26, 2023) Conference concerns the appliance of GLMY theory in advanced technology fields, such as chemistry, biology, and complex networks.

SKILLS

- **English proficiency** TOEFL (MyBest): 100 (reading 27/ listening 26/ speaking 23/ writing 24)
- **Programming proficiency** Python(fluent), Matlab(fluent), Mathematica(fluent), Fortran(beginner)

HONORS AND AWARDS

- Gold medal in iGEM competition (Team: SUSTech-Med), 2023
- Third Prize Scholarship for Excellent Students at SUSTech, 2022
- First Prize in Contemporary Undergraduate Mathematical Contest in Modeling, 2021
- Third Prize Scholarship for Excellent Freshmen at SUSTech, 2020