

ZIHAN SHAO

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EDUCATION

New York University Shanghai (NYU Shanghai), Shanghai, China Expected Graduation: May 2023
Bachelor of Science (with Honors) in Honors Mathematics and Data Science (Double Major)
Overall GPA: **3.92/4.0**; Major GPA: **3.98/4.0** (Honors Mathematics), **4.0/4.0** (Data Science)

New York University (NYU), New York, United States Sept. 2021 - Present
Study Away Program

Relevant Courses: Machine Learning, Mathematical Statistics, Databases, Algorithms, Data Structures, Honors Linear Algebra, Honors Analysis, Complex Analysis, Mathematical Modeling
Graduate-level Courses: Real Variables, Computer Vision, Partial Differential Equations, Numerical Methods, Methods for Applied Math

RESEARCH EXPERIENCE

Data Science and Applied Mathematics Project, NYU Courant, New York, US Jan. 2022 - Present
Topic: Data-Driven Gravity Wave Parametrization in QBO1d
Advisor: Prof. Edwin Gerber

- Using machine learning methods to develop computationally feasible and accurate representations of gravity waves' momentum depositions.
- Constructed and optimized SVM models that generate correct QBO period and amplitudes when coupled online.
- Created a more comprehensive dataset to equip models with greater generalization capabilities.
- Accelerated online emulation of SVM models with a new emulator algorithm.

Data Science Senior Capstone, NYU Shanghai, Shanghai, China Sept. 2022 - Present
Topic: Mask-aware Face Recognition
Advisor: Prof. Li Guo

- Designing a creative and efficient algorithm that performs well in masked face recognition.
- Integrating cosine similarity-based distillation loss to ArcFace-based loss function to improve model's strength to extract uncorrupted feature.
- Using metric learning-based method to improve the accuracy of the algorithm.

Computer Vision Project, NYU Courant, New York, US Oct. 2021 - Dec. 2021
Topic: Efficiency in Semantic Segmentation
Advisor: Prof. Robert Fergus

- Implemented pruning to improve the efficiency of UNet in semantic segmentation.
- Analyzed encoder and decoder's differential sensitivities to pruning.
- Pruned the encoder and decoder separately and differently based on our preliminary analysis.
- Removed 35% of the parameters overall, while minimizing accuracy losses after retraining.

Dean's Undergraduate Research Fund, NYU Shanghai, Shanghai, China May 2021 - Sept. 2021
Topic: Construction of Hairy Ball Theorem and its applications
Advisor: Prof. Siran Li

- Studied Milnor's classical text "Topology from the differentiable viewpoint."
- Annotated the text with proofs, discussions, and visualizations.

In-class Natural Language Processing Project, NYU Shanghai, Shanghai, China Mar. 2021 - May 2021
Topic: Light-weight Sentiment Analysis model
Advisor: Prof. Li Guo

- Implemented the TFIDF method for word embedding and text preprocessing to develop a light-weight model for sentiment analysis that achieved accuracy comparable to big models such as BERT.

PROFESSIONAL EXPERIENCE

- Developer, KaiznTree*, Sydney (remote), Australia May 2020 - Oct. 2020
- Worked as a developer on a three-person international team for a small start-up providing a storage management platform for small businesses.
 - Designed and implemented a built-in auto-email notification system.
 - Developed an algorithm for computing suggested retail prices.
 - Enhanced user experience to a large extent by doing the above.
- Developer, Siemens*, Shanghai (remote), China June 2022 - Sept. 2022
- Worked as a developer in Opportunity-to-Cash department focusing on Robotics Process Automation (RPA).
 - Designed and implemented a document understanding workflow.
 - Designed and implemented an automated lunch ordering system.

HONORS & AWARDS

- Recognition Award, NYU Shanghai*, Shanghai, China July 2022
- SURE Research Fund, NYU Courant*, New York, US May 2022
- DURF Research Fund, NYU Shanghai*, Shanghai, China May 2021
- Dean's List for Academic Year, NYU Shanghai*, Shanghai, China May 2021 & May 2022

EXTRACURRICULAR ACTIVITIES

- Orientation Ambassador & First Year Mentor, NYU*, New York, US Aug. 2021 - Dec. 2021
- Mentored 20 first-year students during the Fall 2021 semester and programmed 4 cohort activities.
- Cast Member, 2020 NYU Shanghai Reality Show*, New York (remote), US July 2020 - Sept. 2020
- Wrote for and acted in "Reality Show," a time-honored NYU tradition.
- Facilitator (remote), Peer-Pal*, Beijing (remote), China Jan. 2020 - Feb. 2020
- Organized and facilitated a series of panel discussions focusing on adolescents' mental health problems.

COMPUTER & LANGUAGE SKILLS

- Microsoft Office Suite, LaTeX
- Programming: Python (Data Science related: PyTorch, TensorFlow, Sklearn, Scipy, NumPy, Pandas), SQL
- Fluent in English and Chinese (native)