Shike(Mike) Chen

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Education

McMaster University, Hamilton ON (Sept 2021- April 2026)

        Bachelor of Software Engineering and Management 3rd year

Experiences:

Research Assistant at Chinese Academy of Science(CNIC)   **May 15th 2023– August 15th 2023**

- Research mainly focusing on computer vision, Deep learning. Develop related applications with Segment Anything (SAM) model.
- My research topic is to use deep learning to find the Lyapunov Exponent (FTLE). The common methods such as the wolf's algorithm is computationally heavy. My goal is to accelerate traditional algorithms through deep learning.
- The method I used to learn FTLE is through an LSTM. An LSTM is better than a traditional CNN because not only it improves computational efficiency, it understands the input and output data in a time series manner.
- The major challenges I have encountered are overfitting and data collection. To solve this problem, I write an algorithm to "fake" data, which allows the model to understand the mathematical computations which it is needed to perform. Then we asked the model to use such mathematical computations on real field. The model performed to our expectation.
- The final model achieved an acceleration of 15min computation of FTLE to within a minute while holding 70%-85% of the accuracy.
- Demonstrated strong communication skills and the ability to report complex technical works in simple words. I made multiple presentations to other researchers who have no background knowledge to my current works.
- Code implementation on github: https://github.com/MikeLoveGame/LSTM-on-FTLE

Software Engineering Class Projects   **Jan 10th 2023-Present**

- Two projects, implementation of Piraten Karpern Game simulator, Mesh ADT
- Piraten Karpen game simulator is implemented on Git with OOP structures for future development. This simulator is very powerful and able to simulate flexible strategies in short time, i.e. 1000 games under 10 second.
- Mesh ADT is a DevOps team project. At the first three releases, the project has a basic algorithm for polygons implemented with Lloyd's relaxation and neighboring. After two more releases the polygons fully functional to simulate different types of island's geographical overview and predictions. Such as weather, geographical climate, precipitations, heatmap etc.

Machine learning Side project: **Sep 2022-Present**

- Responsible for training the YOLO V7 computer vision recognition model, specifically for supporting computer vision recognition for small autonomous vehicles. A small coordinate positioning system is used in conjunction with the model to enable precise grasping of target objects.

Personal website and Simple Collision Simulator   **Dec 31th 2022-Jan 2nd 2023**

- Link: https://mikelovegame.github.io/

Programming Skills

- Programming Languages: Java, Python, C, JavaScript, HTML, CSS, Bash, Octave/MATLAB, SQL
- Concepts & Technologies: OOP, Machine Learning, Computer Vision, React, Vue.js, Node.js, HTTP