# Xuweiyi Chen

xuweic@umich.edu | (206)532-9635 |xuweiyichen.github.io

## EDUCATION

**University of Michigan**                                                                 Ann Arbor, MI
*M.Eng. in Computer Science and Engineering*                          *Aug. 2022 - June 2024 (Expected)*
- **Overall GPA**: 3.83/4.0
- **Concentration**: **Embodied AI**
- **Relevant Courses**: EECS 595 Natural Language Processing, EECS 598 Deep Reinforcement Learning

**University of Washington**                                                                 Seattle, WA
*B.S. in Applied and Computational Mathematical Sciences, CUM LAUDE*                *Sep. 2018 - Jun.2022*
- **Overall GPA**: 3.82/4.0
- **Concentration**: **Causal Inference and Natural Language Processing**
- **Relevant Courses**: Data Structures and Algorithm, Database, Networks, Security, Natural Language Processing, Computer Vision, Statistical Machine Learning
- **Honors**: $6000 CoMotion Mary Gates Innovation Scholarship
         $3000 Usha and S. Rao Varanassi SAFS Scholarship

## INTERNSHIPS

**Here Technologies**                                                                 Chicago, IL
*Data Engineering Intern | Supervisor: Dr. Landis Huffman*                          *May 2023 – Aug. 2023*
- Pioneered the use of a 6-layer MLP system to implicitly model Earth's surface, demonstrating the potential of applying Deep Learning to Geospatial data.
- Engineered five advanced denoising techniques, achieving a reduction in standard deviation by 17.6% and mean squared error by roughly 22% against USGS benchmarks, significantly improving data integrity.
- Spearheaded the consolidation of varied point cloud data sources, applying denoising methods to enhance elevation service accuracy in maps by over 7%.

**National Oceanic and Atmospheric Administration**                                         Seattle, WA
*Research Assistant Intern | Supervisor: Dr. Elizabeth Holmes*                        *June 2022 – Sep. 2022*
- Contributed to research on the Peruvian Coastal Upwelling System using machine learning.
- Designed and implemented algorithms leveraging wavelet transform, regression, and spline methodologies to discern patterns in upwelling time series data.
- Unearthed significant shifts in upwelling patterns post-2010, offering insights that challenge the established Bakun Hypothesis.

## RESEARCH EXPERIENCE

**3D-LLaMA: A Foundation Model for Embodied AI**                                         Ann Arbor, MI
*SLED lab, University of Michigan | Advisor: Prof. Joyce Chai*                        *May 2023 - present*
- Developed a comprehensive 3D-text dataset leveraging ScanNet, 3DFront, and Structured3D.
- Investigated diverse 3D representations and optimized encoding and bounding box methodologies.
- Established an Embodied AI foundational model, demonstrating its efficacy in downstream applications.

**LLM-Grounder: Open-Vocabulary 3D Visual Grounding with LLM as an Agent**                 Ann Arbor, MI
*SLED lab, University of Michigan | Advisor: Prof. Joyce Chai*                        *Jan. 2023 - Aug. 2023*
- Introduced LLM-Grounder, a Large Language Model (LLM)-driven approach for zero-shot 3D visual grounding.
- Enhanced grounding by decomposing intricate language queries and utilizing visual tools like OpenScene to pinpoint objects in 3D environments.
- Achieved state-of-the-art accuracy on ScanRefer benchmarks, demonstrating the effectiveness of LLMs for advanced 3D vision-language tasks.

**An Automation System for MUSHR Car**                                                 Ann Arbor, MI
*Course Project of CSE 478 Autonomous Robotics, University of Washington*              *Jan. 2021 - Apr. 2021*
- Constructed a mathematical model of a robot's dynamics and sensors and assembled three components - localization, planning, and control - to enable a robot to navigate in an environment in a safe, efficient manner.
- Implemented these modules in Python, used ROS for inter-module communications and executed onboard the robot.
- Designed a Bayes filter to estimate the robot's state and environment.
- Derived a controller to robustly track a given path according to stability or optimality criteria.
- Constructed a planning roadmap and applied A* search techniques to compute a dynamically feasible, collision-free path between two locations.

## SKILLS

**Programming:** R, Sage, Julia, MATLAB, Python, Java, HTML, CSS, JavaScript, SQL, Kotlin, C++, PyTorch, TensorFlow
**Languages:** English (proficient), Chinese (proficient)