Ruitao Wu

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Interested Area   Natural Language Process, Object detection and classification, Synthetic Data generation, Software Engineer, Generative adversarial networks, Generative Pre-trained Transformer

ACADEMIC BACKGROUND

M.S. Computer Science   2024
San Diego State University, San Diego, California

B.S. Computer Science   2022
California State University, Northridge, Northridge, CA

N/A Mathematics   2019
East Los Angeles College Monterey Park, CA

EMPLOYMENT HISTORY

Software Developer   SP23 – NOW
The SysteMs And InteLligEnce (SMILE) Laboratory, San Diego, CA
- Leading a group to design an unmanned aerial vehicle(UAV) control system
- Base on robot operating system(ROS) design graphical user interface(GUI) allows user to send command over GUI to UAV

Research Assistant   2021 - 2022
The Autonomy Research Center for STEAHM (ARCS), Northridge, CA
- Participant in various reserach project in field of Computer Science and Engineering
- Working on *Using openCAESAR and INTREPID to design and additively manufacture the Multiphysics optical tracker* Project Intro
- Design vocabulary and ontology for project implement by ontology modeling language as well as the flowchart of the project

PROJECT

Multimodal Data Generation   SP23—NOW

Software Deveoper
- Participate research project in synthetic data generation
- Participate multimodal data generation project
- Synthetic text and image data generation which include: text-to-text and text-to-image

Robot Operating System based Graphical User Interface   SP23—NOW

Primary Software Engerneer/Core Deveolper
- Design a graphical user interface(GUI) based on robot operating system
- Develop an application user interface that allows a user to access the GUI and control an unmanned aerial vehicle(UAV)
- Develop UAV control and mission plan that allows UAV to accomplish different task

Senior Design CalTrans Project   2021/08 – 2022/05

Leader/data process/database design
- Leading a group to develop real-time vehicle detection and classification system

- Use YOLO3(YOU ONLY LOOK ONCE version 3) trained a customer machine learning model that could classify Six types of vehicle
- Bring out an enhanced and powerful model in vehicle classification in real-time system compare to all other YOLO model

Multiphysics optical tracker   2021/6 - 2022/06

CSUN ARCS Developer/Programmer

- Use ontology modeling language to build an ontology for the project in openCAESAR
- Define discipline and application vocabularies for the project. Integrate existing vocabularies, such as foundation and core vocabulary.
- Define description for each project component, such as thermal analysis, general design optimization, and topology optimization.
- Use SPARQL for data retrieve on the Apache Jena Fuseki server
- Design and implement a web application to demonstrating and format the SPARQL query result

Snakebyte Transpiler   06/21 - 07/21

Programmer

- Design a compiler that implement Java language target Python language
- Added more than **2000 Lines** of test code which achieve code coverage above 90%
- The compiler includes the following parts: parser, lexcer, typechecker, and code generator GitHub

Skills	- Java, JavaScript, C/C++, Python, HTML/CSS, Git, Machine Learning, Sklearn, YOLO, Keras/TensorFlow/PyTorch, MySQL, ROS
MEMBERSHIP	*NASA – The Autonomy Research Center for STEAHM, Student Fellow* *Association for Computing Machinery, Student Member* *Institute of Electrical and Electronics Engineers, Student Member* *Laboratory for Sustainable and Additive Manufacturing, Alumni* *The SysteMs And InteLligEnce (SMILE) Laboratory, Group Member*
Pulicashion	**R. Wu**, *et al. "Real-time Vehicle Detection System for Intelligent Transportation using Machine Learning," 2022 IEEE Green Energy and Smart System Systems(IGESSC), 2022, pp. 1-6, doi: 10.1109/IGESSC55810.2022.9955329.*
Conference Presentation	*IEEE Green Energy and Smart Systems Conference, LONG BEACH, CA,* 2022 *IEEE Green Energy and Smart Systems Conference–Student Poster Competition Session 2022* **Subject** Vehicle Detection for Real-time Traffic Flow using Machine Learning *CSU, Northridge's Autonomy Research Center for STEAHM poster presentation at JPL 2022* **Subject** Subject: Digital Twin Integration of openCAESAR and INTREPID to design and additively manufacture the Multiphysics Optical Tracker

HONORS	*Dean's List*	*Fall 19 | Fall 20 | Spring 20*
AWARDS	*Senior Design Showcase First place in Computer Science Department*	*Spring 22*
	Oral Presentation 3D Object Detection and Vehicle Classification based on LiDAR Point Clouds to Monitor Real-time Traffic Flow	

| **Volunteer** | *The Orange County Food Bank* | 2019 |
| | Package food in warehouse | |