Yongle (Jack) Yuan
yongle.jack.yuan@gmail.com
(608) 960-1979

EDUCATION

University of Wisconsin – Madison   *Madison, WI*
- B.S. Computer Science   *May 2022*
- B.S. Applied Math, Engineering, and Physics (AMEP)

Relevant Coursework: Object-Oriented Programming, Computer Architecture, Database Management Systems, Operating System, Signal Processing, Circuit Analysis, Numerical Analysis, Machine Learning, Neural Network

WORK/VOLUNTEER EXPERIENCE

RND4IMPACT   *Mountain View, CA*
Machine Learning Research Volunteer   *September 2022 – Present*
- Studied reinforcement learning by following online lectures from Stanford; learned about Markov Decision Process, Q-learning, policy optimization, and imitation learning through problem sets and programming assignments.
- Researched privacy and security concerns in machine learning; collected and compared methods to ensure data privacy, such as distributed learning and differential privacy.

Center for High Throughput Computing (CHTC) – Open Science Grid   *Madison, WI*
Software Integration Assistant   *June 2021 – May 2022*
- Generated, debugged, and updated GitHub Actions to trigger automatic workflows that build and test projects and Docker images.
- Modified Docker files to enable/disable repositories by default while preserving their original behaviors.
- Built three reusable GitHub composite actions for building, caching/loading, and pushing Docker images for all OSG repositories.

RESEARCH EXPERIENCE

Laboratory for Optical and Computational Instrumentation (LOCI)   *Madison, WI*
Undergraduate Researcher   *February 2021 – May 2022*
- Resolved GitHub issues for the Scientific Image Format Input & Output (SCIFIO) project by analyzing codes and writing unit tests in Java.
- Inspected image metadata of OpenEXR, an unsupported image file type in SCIFIO, and translated it to SCIFIO-specific image metadata to support OpenEXR in the image processing program ImageJ.
- Migrated automatic Maven project building process from Travis CI to GitHub Actions by modifying shell scripts and YAML files.

Security and Privacy Research Group *Madison, WI*

<u>Undergraduate Researcher</u> *June 2021 – September 2021*

- Investigated how a bit-flipping attack can log in to a Linux without knowing the password.
- Examined Linux source codes used during login to identify which variable needs to be bit-flipped to bypass the password and where it is in memory so that such attacks can be reproduced by heating a part of a physical computer memory using a laser.

Connected and Automated Vehicle & Highway (CAVH) Simulation Group *Madison, WI*

<u>Undergraduate Researcher</u> *September 2020 – March 2021*

- Created 3D models of various construction signs using SketchUp and Adobe Photoshop for better visualization in the simulation.
- Built a traffic flow simulation with 3D animation for dedicated lanes of connected automated vehicles from Madison to Chicago O'Hare Airport via I-90 under regular conditions and construction using PTV Vissim.
- Collected and compared the data of the performance of the CAVH dedicated lane and human-driven lanes with the goal of presenting the information to the Wisconsin Department of Transportation.

PROJECTS

Biological Age Prediction *August 2022 – Present*

- Surveyed publications on health status assessment.
- Investigated different models to estimate one's biological age using various biological markers.
- Evaluated existing biological age prediction models using statistical analysis and survival models.
- Implemented machine learning models using TensorFlow, including regressors, SVM, DNN, and CNN, to estimate biological age; the results are compared with existing models.
- Researched Neural Architecture Search Network in TensorFlow and experimented with it to find the architecture with the highest performance.

Mandatory Lane Change Prediction *March 2021 – June 2021*

- Researched proposing a mandatory lane change (MLC) model and gap acceptance based on NGSIM data on the US101 highway to produce a better MLC model for traffic simulations.
- Created LSTM models to predict vehicles' lane change behaviors, such as yaw angle, acceleration, etc.

TECHNICAL SKILLS

- Experience with Python (TensorFlow), Java (Spring Boot), C, C++, MATLAB, Shell Script, SQLite, GitHub, Microsoft Excel, LaTeX
- Basic knowledge of HTML, CSS, JavaScript