

# ELLE SZABO

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## EDUCATION

### University of Southern California

*B.S. in Computer Science*

- Major GPA: 4.00/4.00
- Activities: Treasurer at VEX Robotics USC, Track Club

Los Angeles, CA

May 2023 (*Expected*)

## EXPERIENCE

### Microsoft | *C/C++, PowerShell*

*Software Engineer Intern*

May 2021 - July 2021

Redmond, WA

- Created a proof-of-concept search indexing system to replace Windows' pre-relational-database indexer
- Proved the efficiency of 5 types of file metadata inclusion, will be rolled out on > 1 billion devices

### NASA Jet Propulsion Laboratory | *ROS, Gazebo, Linux, librealsense*

*Software Engineer Intern*

Sept 2020 - Jan 2021

Pasadena, CA

- Developed a simulation pipeline with ROS and Gazebo for an autonomous inspection rover
- Expedited the simulation boot by 22% by creating a custom physics engine plugin

### Lucid Circuit | *OpenCV, Makefile, Python, Keras, numpy, Linux*

*Software Engineer Intern*

May 2020 - Jan 2021

Santa Monica, CA

- Simulated a machine learning model for satellite telemetry using TensorBoard Lite visuals
- Programmed a statically linked OpenCV to demo the custom architecture's object tracking to client

## SELECTED PROJECTS

### Vision and Language Navigation | *Python, OpenAI Gym, PyTorch, Flask*

August 2022 – Present

- Conducting CoRL-aimed research on machine learning for robotic navigation with language and vision inputs
- Research under *Jesse Thomason* in ICAROS Laboratory

### VR Therapy for Alzheimer's | *C#, Unity, OpenAI API*

February 2023

- Developed an app for Oculus Quest to converse with an avatar, save stories, summarize, and generate images

### Multi-Headed Encoder-Decoder Model | *matplotlib, PyTorch, sklearn, numpy, conda*

November 2022

- Implemented an Encoder-Decoder model that takes in ALFRED instructions for an entire episode and predicts the sequence of corresponding, high-level actions and target objects

### Autonomous Robot | *YOLO5V, Roboflow*

August 2021 – May 2022

- Programmed vision-based autonomous scoring using an optical sensor to place rings on the goals' branches
- Created data frame to capture RGB-D images and perform custom object recognition with YOLO5V

### PyRibs | *Python, JAX, numba, numpy, OpenAI Gym*

May 2022 – June 2022

- Main contributor to PyRibs, an open-source Python library for exploring the latent space of machine learning models
- Research under *Stefanos Nikolaidis* in ICAROS Laboratory

## AWARDS/HONORS

### 2nd Skills in World, Think Award

2022 VEX Robotics World Championship

- As programming lead, scored 2<sup>nd</sup> only to Purdue of world's top 72 teams in skills
- Earned Think award for innovative use of autonomous optical scoring sensor

### Presidential and University Scholarship Recipient

University of Southern California

- One of 200 chosen out of 64,000 applicants for a half-tuition merit scholarship plus \$4000 award for an outstanding application

## TECHNICAL SKILLS

**Languages:** Python, C/C++, SQL, Swift, C#, JavaScript, Java, HTML/CSS, Latex

**Platforms:** ROS, Linux, Raspberry Pi, Powershell, Heroku, Unity, Make, OpenAI Gym, Docker

**Libraries/Tools:** PyTorch, OpenCV, Numba, JAX, conda, Keras, Flask, TensorFlow, TFLite, Firebase, Stripe, GTest, Boost, rtabmap, TESSERACT, AWS, OpenAI API

For a layout of all of my projects, please visit my [Website](#).