# KOLTON SPEER

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## EDUCATION

**University of Missouri** — **PhD in Computer Vision and Graphics**, May 2024

**University of Missouri** — **Bachelor of Science in Computer Science**, May 2019
Minors: Physics, Mathematics

## RESEARCH AND WORK EXPERIENCE

**Research Assistant for Dr. Ye Duan** — **May 2019 – Present**

- Investigating methods for Visual Odometry and Visual SLAM.
- Investigating methods for DeepFake generation and detection.

**Research Programmer for Dr. Bruce Bartholow** — **May 2018 – Present**

- Programmed participant tasks for a study on alcohol sensitivity.
- Built program to automatically score participant video data using the Facial Action Coding System.

**Undergraduate Research Assistant for Dr. Yi Shang** — **December 2017 – May 2019**

- Determined predictive factors for successful sales calls using Natural Language Processing techniques.
- Presented a poster at the University of Missouri Undergraduate Research Forum.

**Systems Assurance Intern at Union Pacific** — **May 2015 – August 2015**

- Worked to develop and ensure the continuing function of Positive Train Control.
- Developed applications to track system health and diagnose errors in Wayside radios.

## SELECTED PROJECTS CODE AVAILABLE ON GITHUB

**Deeptector.io** WINNER OF THE 2020 RJI STUDENT INNOVATION COMPETITION

- Deeptector.io is a web app for detecting DeepFake videos that targets journalists in small news rooms.

**AutoFACS**

- Developed a system to automatically annotate psychological study participant video data using the Facial Action Coding System.
- Currently developing more robust facial landmark detectors for use in this system.

**Slither Bot**

- Developing an AI system to play Slither.io, a multiplayer online game.
- Training convolutional neural networks to make end-to-end control decisions in a chaotic environment.

## SKILLS

- **Languages**: C, C++, Python, Java, Kotlin, Matlab, x86 Assembly
- **Databases**: PostgreSQL, MongoDB, SQLite
- **Libraries/Software**: OpenCV, Tensorflow, Pytorch, Flask, CUDA, ROS, OpenGL
- **Parallel Programming**: Multithreading, Multiprocessing, GPU programming
- **Computer Vision**: Visual Odometry, Image Segmentation and Classification, 3D Reconstruction

## EXTRACURRICULAR ACTIVITIES

**Mizzou Eco Racing Team** – Head Electrical Engineer for Hydrogen Car Division

- Designed and implemented electrical systems for a Hydrogen Fueled Urban Concept vehicle.
- Currently designing an autonomous system for a vehicle in the FSAE Electric competition.
- Annual competitor in the Shell Eco Marathon in Sonoma, California.