jkoch21@usf.edu
(631) 372-1384
Tampa, FL

Jonathan Koch

https://linkedin.com/in/jonathanzkoch/
https://github.com/Johnnykoch02/
https://Linktr.ee/Johnnykoch02/

PROFESSIONAL INTERESTS

***Languages**: Python, C & C++, C#, Java, Lua, JavaScript, Perl*
***Worked With:** GitHub API, Stable-Baselines3, OpenAI, PyTorch, Django, React, REST, Linux, Cisco Networking, 2D & 3D Physics and Simulation Engines*
***Research Background:** Robotics & AI; Object Manipulation and Grasping, Deep Q Networks, Proximal Policy, DNN Architectures, Graph NNs & LSTMs*

EDUCATION

Bachelor of Science in Computer Science, Concentration in Robotics and Automation — **Cumulative GPA:** *3.6/4.0*
University of South Florida College of Engineering, Tampa, FL — *Fall 2020 - Spring 2024*
***Courses Taken**: Data Structures, Intro to AI, Control of Mobile Robots, Operating Systems, Computer Architecture, Calculus III*

EXPERIENCE

Software Engineering Co/Op — **May 2022 - Present**
CAE USA — ***Tampa FL***

- Development of Windows and Linux lab environments of computer system networks for simulation and hardware testing.
- Expanded GitHub and Artifactory API functionality within in-house software management tools and projects using Rest Sharp; Angular JS application development for system management automation tool, and user permissions manager.
- Development of Docker and Jenkins Unit Testing pipelines for commonly used software tools built in Visual Studio.
- Collaborated on repositories for improving SonarQube quality gate rating on dozens of source code ratings from E to A.

Undergraduate Researcher — **Fall 2021 – Present**
Robot Perception and Action Laboratory, *University of South Florida*, https://rpal.cse.usf.edu/ — ***Tampa FL***

- Research in robotic object manipulation through reinforcement learning; Collect and analyze data in the real world and simulation for training of RL models and investigate new solutions to improving model accuracy and performance.
- Document and communicate results amongst lab members and incorporate recorded findings into academic publishing.

Senior Coding Coach — **Fall 2021 – Winter 2022**
theCoderSchool — ***Tampa FL***

- Formulate hobby projects based on student's interests, aid in design development, and educate on the utilization of necessary computer logic principles. Embrace the software design process to bridge ideas to reality.

Mentorship/Expo Chair, VEX Robotics Programming Lead — **Fall 2020 - Present**
USF IEEE Student Chapter — ***Tampa FL***

- Lead Mentorship Club; organize and lead meetings, aid students in problem-solving, and work within a budget constraint.
- Lead Programming for VEX; Design and Lead project implementation; assign programming work to programming members to learn and aid in the development of software for sensor systems, data collection, and system testing.

PROJECTS

Virtual Assistant — **August 2021 - Present**
https://github.com/Johnnykoch02/VirtualAssistant — ***(Video from the Data Pipeline)*** https://www.screencast.com/t/6TbGzbHzr

- Develop a python Agent to target novice actions performed on a Computer User and allow verbal automation of watching Netflix shows and movies, watching YouTube videos, and playing songs on Spotify.
- Research into Keyword Model Architectures and development via Convolutional Neural Networks and LSTMs.
- Development of a system that memorizes information about different users and converses based on previous experiences, implemented using OpenAI's text-davinci3 model open-source API.

AI Chess — **August 2022 - Present**
https://github.com/Johnnykoch02/*ChessEngine* — ***(Video Detailing Project)*** https://www.screencast.com/t/f4BB4gmnze

- theCoderSchool Project with an advanced Python Student, who had the desire to learn about Game Development
- Implementation of decision trees, state machines, project structuring, and Artificial Intelligence Algorithms
- Since my departure from theCoderSchool, this project has been morphed into a self-research project into training an agent via RL algorithms such as PPO or DQN to create a superhuman performance chess AI (*see GitHub Repository*).

TerriBull Robotics Vex Library (*Program Team Lead)* — **August 2021 – Present**
https://github.com/Johnnykoch02/BullBot — ***(Competition Video)*** https://www.instagram.com/reel/CdJ00oyvc0V/

- Software Library written for TerriBull Robotics Team for fully autonomous capabilities and task implementation.
- *Jetson*: Designed to track object positions and communicate object data being processed from the camera.
- *V5*: Controller of most sensors and task implementation; performs actions and relies on Jetson to minimize error.