Austin Guiney

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Education

University of California San Diego – MS in Computer Science and Engineering   Expected: 2027

Projects

RoboMaster Tag   github.com/pyreking/robomaster
- Created laser tag game for programmable mobile robot in Python with computer vision, leading team of 4 engineers to top 5 project ranking using agile leadership
- Developed path planning and obstacle avoidance system for mobile robot using state-based approach, enabling autonomous navigation in real-world environment
- Built backend object-tracking feature with camera-based distance estimation, achieving 95% accuracy within 4 meters
- Implemented peer code reviews, leading to reduction in bug reports and improved code maintainability
- Led daily stand-up meetings to promote team alignment and accountability, ensuring project goals, requirements, and use cases were understood

CHIP-8 Emulator   github.com/pyreking/chip-8
- Developed Python-based virtual machine that accurately emulates 8-bit computer architecture, enabling users to play library of 130 classic video games
- Designed frontend UI in Tkinter for loading games, saving progress, and changing default controls
- Implemented 60-second rewind feature, enabling players to undo mistakes
- Reduced file size for save data by 84% with compressed sparse row storage
- Improved code organization and maintainability with modular software design, leading to faster development

Treasure Hunt   github.com/pyreking/treasure-hunt
- Created 3D adventure game targeting young audience by designing levels with Unity and C#, receiving positive feedback from players for challenging exploration puzzles
- Implemented hint system that guides players toward points of interest with positional audio cues, improving player navigation and experience
- Developed real-time audio system that plays context-aware footstep sounds based on game environment (sand, grass, stone), creating immersive gameplay experience
- Designed HUD that tracks player progress (health, score, time remaining) in Blender, improving UX through easy access to information
- Presented 20-minute playable game demo, winning "Best Presentation" out of 13 presentations

Experience

Oracle Fellow, University of Massachusetts Boston – Boston, MA   Jan 2023 – May 2023
- Reduced average runtime of correctness verifier using runtime profiling to develop theory selection heuristic (funded by Oracle grant)
- Decreased average false-alarm rate in correctness verifier using exploratory data analysis on dataset of performance metrics
- Designed poster to present scientific research at Student Success Showcase, winning "Best Poster Design" out of 50 entries

Teaching Assistant, University of Massachusetts Boston – Boston, MA   Oct 2022 – Dec 2022
- Provided supplemental instruction for class of 70, covering fundamental concepts in automata theory, computability, and complexity theory
- Mentored students in 1:1 sessions, creating personalized learning environment that improved average homework grade by 10%

Skills

Languages: Python, Java, C#, C, C++, x86 Assembly
Technologies: Tkinter, Pandas, Matplotlib, Keras, NumPy, OpenCV, Arduino, Jira