José Teodosio Lorente Vallecillos

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June 2024 graduate seeking part-time opportunities in Software development & AI

Education

7/10 **Degree in Computer Engineering**, *Escuela Tecnica Superior de Ingenierias Informatica y de Telecomunicacion* | Granada, Spain *2018-24*

Achievements: Finalist in Sumo Intelligent Robot Fighting League
Courses: Development in Python | App Development in Flutter | Object Oriented development in Java | Web development | Software Design | Software Optimization | Development in C++

Skills

Programming	Python, C/C++, Assembly language, Java, JavaScript, PHP, R, Ruby, Ruby On Rails, Flutter, Dart, CUDA, CMake, Git, Scripting (Bash), LaTeX, HTML, Vim, VHDL, CSS, SQL, MariaDB
Robotics	Arduino, Sensor Interfacing, Sensor Fusion, PLC
Software	Linux, Pytorch, Docker, OpenCV, OpenGL, Algorithms, Artificial Intelligence Algorithms.
Certifications	Computer Engineering, University of Granada – (2024) | Computing and intelligent systems, University of Granada – (2024) | Software Engineering, University of Granada – (2024) | Information Technology, University of Granada – (2024)

Projects

Augmented Reality System with Neural Network-Powered Assistant *Feb 2023 - May 2023*

Ubiquitous and Environmental Computing Project

- Led a project in Ubiquitous and Environmental Computing focused on augmented reality (AR), real-time image recognition, and processing.
- Developed a sophisticated AR system featuring real-time image recognition, creating a **3D Augmented Reality Representation** of a Windows PC on a table with markers defining its borders.
- Implemented an AI-powered personal assistant named Alberto using a **Neural Network For Basic And Limited Conversations**, capable of executing user commands on the computer.
- Enhanced security by incorporating **Facial Recognition** using a **Neural Network** to authorize registered users before allowing system access.
- Enabled the AR system to recognize hand gestures through another **Neural Network**, utilizing the right hand as a virtual mouse and allowing **Gesture-Based Commands And Shortcuts** for system control.
- Recreated Tony Stark's iconic workspace from the movie Iron Man, complete with the ability to interact with 3D objects on the augmented desktop, such as **Grabbing And Manipulating Tabs Or Open Program Windows**.

Community Incidents Management System *Feb 2023 - May 2023*

Web Development Project

- **Led** the development of a comprehensive web platform from scratch using **HTML, HTTPS, CSS, PHP, and JavaScript**, hosted on an **Apache** server.
- Designed and implemented a fully functional database system with a user table, allowing residents to register accounts and securely manage incidents in their neighborhood.
- Developed a user-friendly interface with a dedicated section for users to submit new incidents via a form accessible from the menu.
- Implemented a **Robust Security Layer** to validate and sanitize input parameters, ensuring data integrity and preventing potential security issues in the database.
- Each incident featured a detailed description and the ability to upload images to provide additional context.
- Incorporated a **Voting And Commenting System**, allowing residents to interact with and prioritize incidents submitted by others.
- Implemented a **Ranking System For Top Incidents**, providing a dynamic leaderboard based on user engagement and community impact.
- Included advanced **Filtering Options** to streamline the incident list, enhancing user experience and accessibility.

Flutter App with Ruby on Rails Backend for Motorcycle Customization *Feb 2023 - May 2023*

Moto Configuration App

- Developed a motorcycle configurator app using **Dart** and **Flutter**, with a backend powered by **Ruby on Rails**.
- Implemented a secure user authentication system with **hashed passwords** and robust database security measures.
- Designed a relational database to store user profiles, orders, and precise configurations, ensuring data integrity and user privacy.
- Constructed a user-friendly interface with animated transitions, a structured menu, and a page hierarchy for seamless navigation.
- Enabled users to customize their motorcycles, place orders with detailed configurations and optional extras, linking pages in Flutter to showcase different sections of the app.

Autonomous Sumo Wrestling Robot *Feb 2022 - May 2022*

Robotics Project

- Designed and built an **Autonomous Sumo Wrestling Robot** with intelligent movement using four electric motors.
- Integrated sensors, including three ultrasonic sensors for opponent detection and an infrared sensor to avoid going out of bounds.
- Developed a unique strategy using a **Black-Taped Plate** to induce opponent retreats and successfully reached the **Finals**.
- Implemented the system with **Two Arduino Boards** and **Two H-Bridge Boards**, showcasing efficient resource management and innovation.

Moore Machine Implementation and Competencies *Sep 2021 - Dec 2021*

Automata and Formal Languages Project

- Implemented a **Moore Machine** and demonstrated proficiency in mathematical language, including proof generation.
- Utilized **Finite Automata**, stack machines, and Turing machines for designing models in language recognition problem-solving.
- Explored hierarchy relationships between language classes and machines, showcasing a comprehensive understanding of interconnections.
- Applied diverse computation models for numeric or string function calculations, illustrating practical applications of theoretical concepts.

Interactive 3D Scene with Handcrafted Models and Animations *Sep 2020 - Dec 2020*

OpenGL 3D Scene Project

- Developed a dynamic 3D scene in **C++** using OpenGL, featuring handcrafted .ply models and intricate animations.
- Implemented a keyboard-controlled menu system for activating five simultaneous animations, switching cameras, and adjusting lighting.
- Incorporated objects of revolution, showcasing expertise in handling complex geometric transformations.
- Applied textures to enhance visual realism within the scene, elevating the overall user experience.

Maze Navigation with Wolf Agents *Feb 2020 - May 2020*

Artificial Intelligence and Game Development

- Implemented an **Intelligent Agent System** for maze navigation with a focus on user evasion from wolf agents.
- Designed and simulated a dynamic maze environment with four different terrain types: **Water, Mud, Normal land, and Forest**.
- Developed an algorithm for user movement considering the effects of terrain on speed, requiring the user to find a **Hidden Swimsuit** to traverse water.
- Implemented wolf agents with **AI Algorithms** to hunt down the user, creating a **challenging and engaging experience.**
- Utilized **Pathfinding Techniques** to find optimal routes for both the user and wolf agents within the maze.
- Enhanced the user interface to visualize the maze, terrain types, and agent movements for a **Comprehensive Gaming Experience**.

Monopoly Game Implementation *Sep 2019 - Dec 2019*

Java Programming and MVC Design

- Developed a Monopoly game using Java with a focus on the **Model-View-Controller (MVC)** design pattern.
- Designed and implemented a 2D graphical user interface for the game, providing an interactive user experience.
- Utilized **Object-Oriented Programming** principles to create modular and maintainable code for various game components.
- Implemented game logic, player actions, and turn management within the MVC architecture.

Solution to the N-Queens Problem *Feb 2019 - Mar 2019*

Individual Project - N-Queens Problem

- Conceived and developed a sophisticated solution to the classical N-Queens problem using **C++**, demonstrating proficiency in algorithmic problem-solving.
- Implemented advanced **Backtracking** algorithms in C++ to efficiently generate and visualize all feasible solutions for a given board size (n).
- Designed and implemented the **C++ Branch and Bound** algorithm, leveraging a structured approach to achieve exhaustive enumeration of the solution space through the generation of a spanning tree.

Achievements

2021 **UGR SMP Finalists,** Fighting Robotics Competition 2021 *Granada, Spain*

2018 **UGR MP Award,** N-Queens Problem *Granada, Spain*

Languages

English Professional proficiency

Chinese Basic proficiency

German Basic proficiency

Spanish Native proficiency