PORTFOLIO.

Software Engineer & UX Enthusiast

Miguel Rodrigues Teixeira

Hi! I'm
Miguel Teixeira

As a Software Engineer, I enjoy being **creative** and designing **interfaces** that reflect my vision while ensuring they are both **intuitive** and **aesthetically appealing**. The challenge of crafting **seamless user experiences** motivates me to refine my skills and push the boundaries of **frontend development.**

I find great fulfillment in creating **solutions** that genuinely **help people,** whether it is for improving **accessibility**, enhancing **usability**, or streamlining **workflows**.

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Hard Skills

Soft Skills

- Team worker
- Organised
- Focused
- Creative
- Curious
- Meticulous

Education

High School Completion Certificate|2019 - 2022
Escola Secundária Camilo Castelo Branco, Vila Real

Degree in Software Engineering |2022 - 2025
Universidade de Trás-os-Montes e Alto Douro

Work Experience

Part-time Taekwondo Instructor|2021 - present
Taekwondo Clube de Vila Real

Full Stack Developer & Assistant Researcher
|2023 - present
HCI Lab - Universidade de Trás-os-Montes e Alto Douro

Languages

Portuguese: Native

English: Intermediate (B2)

French: Basic (A2)

PROJECTS

01 BartleZ

A Gamified Approach to Overturn Traditional Bartle Player Type Attribution

Overview

BartleZ was developed by the **HCI Lab** at UTAD as part of ongoing research in Human–Computer Interaction.

The game is designed to assess player's **competitive** and **cooperative** orientations using Bartle's Taxonomy, to classify players as:

BartleZ - Game Background

Methodology

- **REST API** & **Database**: Automatic collection and storage of data from The Bartle Test of Gamer Psychology;
- **Game Session**: Participants played on their computers, interacting with three game mechanics:

PTD (Player Type Decisions)

Measures game preferences by player type.

CvC (Competitive vs. Cooperative Dilemmas)

Decisions that shape the next level.

HIT (In Level Transitions)

Tests ability to detect sarcasm.

- **Statistical Analysis**: Comparison of the accuracy of GWAP with that of the traditional questionnaire.

Personal Contributions

- Developed **interfaces** with **JavaScript/HTML:** Learned responsive design and simplifying interactions and at the same time ensuring cross-device consistency;
- Integrated **functionalities** via **REST API:** Gained data handling skills whilst dealing with reliability issues;
- Conducted **usability testing:** Learned from feedback while facing the need for fast iteration.

JS HTML CSS API

02 Biblioteca-LEI- UTAD

An advanced app designed to enhance the library experience at UTAD

Overview

Developed as a group project to support the **Library** at the **Universidade de Trás-os-Montes e Alto Douro (UTAD).**

The application was conceived to provide an efficient and functional platform for **managing** all essential **library operations** through an SQL-based database.

Biblioteca-LEI-UTAD - Home Screen

Biblioteca-LEI-UTAD - Main Screen

Methodology

- The platform was designed with **different user roles:**

Readers

Register and log in;
Request books;
Browse the book catalogue.

Librarian

Manage user accounts;
Approve new librarians;
Ensure system security and compliance.

Administrator

Block readers violating policies;
Add and update books in the catalogue;

Personal Contributions

- **User and book management system in C#**: Learned robust backend structuring; implemented core functionality and debugging complex flows;
- **Authentication** and **access control with Entity Framework**: Gained secure user management skills, while also addressing occasional performance issues;
- **SQL database** design and teamwork: Learned collaboration and optimisation; managed conflicting requirements under tight deadlines.

03 Jogo do Semáforo

A Fun Mathematical Python Game for Quick Thinking

🔍 Overview

My first university project, inspired by **Tic-Tac-Toe** but with unique differences:

- Includes an extra column.
- Uses **three shapes**: circle, triangle, square.
- Objective: **align three** consecutive **pieces** (horizontal, vertical, diagonal) before the opponent.

Jogo do Semáforo - Home Screen

Jogo do Semáforo - Player vs BOT

✍ Methodology

- At the start of the game, players can choose whether to play against:

Another player

Players share the same computer to play and compete against each other.

AI Bot

Challenge an AI bot, which uses a simple rule-based algorithm to make strategic moves.

Personal Contributions

Game development in Python with Pygame:

- Learned **game logic** structuring and AI behaviour;
- Designed and implemented gameplay, built the **user interface;**
- **Created the AI Bot**, while managing all challenges of solo development.

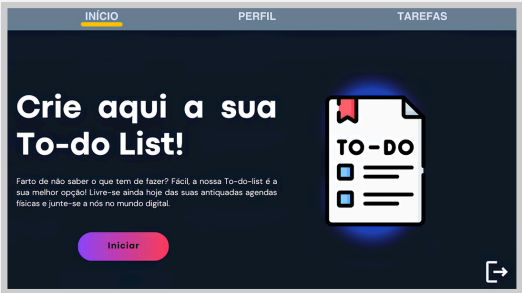
04 To-do-List

The Ultimate To-Do List App for Effortless Task Management

🔍 Overview

Application designed to support individuals managing high volumes of tasks by providing a structured solution to:

- **Organise** and track **activities**;
- **Boost productivity** and time management;
- Offer an intuitive and functional environment for **daily workflow control.**



To-do-List - Home Screen

To-do-List - User Tasks Screen

✍ Methodology

The app presents users with a clear overview of tasks (pending, completed, ongoing) and provides detailed attributes:

- **Name and Description**;
- **Start and End Dates**;
- **Priority Levels**;
- **Task Status** (completed, in progress, pending);
- **Recurrence** (define frequency);
- **Alert System** (reminders to ensure nothing is overlooked).

🧩 Personal Contributions

- **Designed and implemented the SQL database**: Learned efficient data structuring and query optimisation. Faced challenges in ensuring consistency and performance;
- Programmed the **C# application interface**: Built task prioritisation and notification logic; managed complexity in coordinating frontend behaviour with backend data.
- Contributed to **back-end** and **front-end features**: Gained full-stack development experience; handled integration and collaboration challenges.

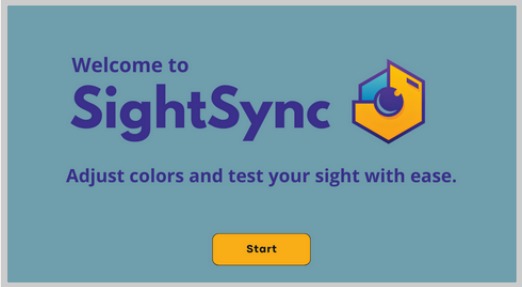
05 SightSync

Test and adjust screen colours to enhance accessibility for colour-blind users

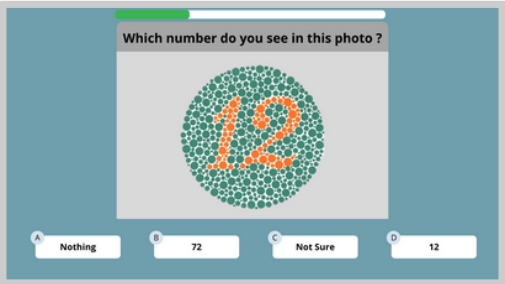
Overview

Developed as part of a **Human-Computer Interaction** project, **SightSync** is an application designed to help individuals with colour blindness.

It addresses the **lack of accessibility options in many digital interfaces**, which compromise usability and make distinguishing essential visual elements difficult.



SightSync - Home Screen



SightSync - Colour Blindness Test

Methodology

- Implemented **colour adjustment tools** to enhance visibility;
- Applied **HCI principles** to ensure accessibility and usability;
- Validated the application through **user testing**, with a focus on enhancing the experience for colour-blind users.

Quick Note

This app is currently being used in an optician's office to help opticians assess whether patients are colour-blind.

Personal Contributions

- **Designed the UI with a focus on accessibility:** Learned principles of accessible design; implemented intuitive layouts and faced challenges in balancing usability with aesthetic choices.
- Developed the **screen colour adjustment logic**: Learned about dynamic UI control and user preferences and managed challenges ensuring consistency across screens.
- Collaborated on **application validation and usability testing**: Learned to interpret user feedback; tested and refined the application; managed rapid iteration challenges.

JS HTML CSS

06 Space Invaders 3D

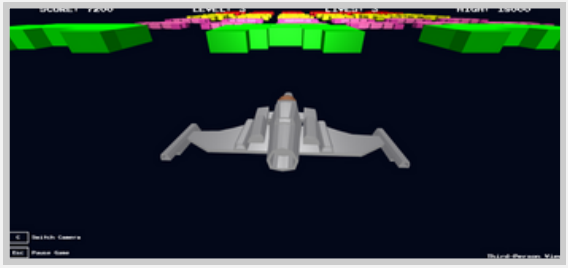
A 3D remake of the classic Space Invaders using WebGL and Three.js

Overview

Developed as part of a **Computer Graphics** project, this game is a **3D reinterpretation** of the classic Space Invaders.

Using **WebGL** and **Three.js**, the game introduced a third dimension to the traditional 2D gameplay, creating a more immersive and dynamic experience.

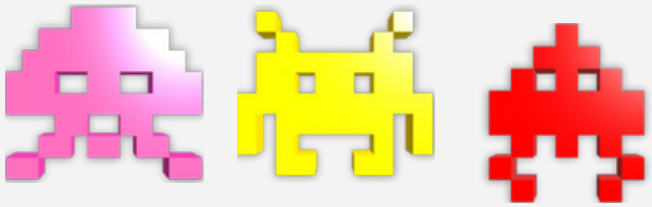
Space Invaders 3D - Orthographic Camera



Space Invaders 3D - Perspective Camera

Methodology

- **Five levels** for an engaging user experience;
- **Protective barriers** and **Invaders**, built with cubes in matrix structures;
- **Orthographic** and **perspective** cameras for varied visual perspectives.



Space Invaders 3D - Invaders

Personal Contributions

- Developed the **shooting system** and **collision detection**: Learned game mechanics and ensured accuracy and responsiveness.
- Designed **camera behaviour**: Learned dynamic camera control, improved immersion;
- Refined **spaceship animations**: Learned animation timing; enhanced motion realism; synchronised with gameplay.
- Added **audio system**: Implemented music and SFX; balanced timing and volume.