



# Majesture

Gesture recognition based game with elemental magic

# Introduction to the Project

Welcome to our presentation on an innovative gesture-based action game where players control elemental magic. Our game harnesses the power of gesture recognition to create an immersive and interactive experience, transforming how players engage with digital games.



# Inspiration and creativity

Traditional games often rely on physical controllers, which can limit player immersion and interaction. We identified a gap in the market for games that fully utilize gesture recognition, allowing for more natural and engaging player interactions. Our goal was to address this gap by developing a game that uses hand gestures to control in-game actions.





# Project vision and mission

01.


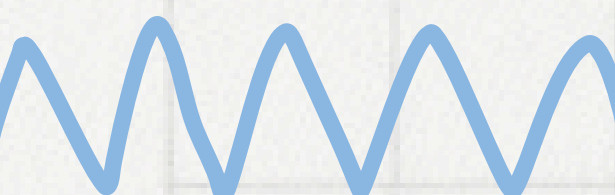
We selected the YOLO model for its high accuracy and real-time processing capabilities, essential for gesture recognition. Using the ONNX format ensures compatibility with Unity, allowing us to integrate the model seamlessly into the game.

02.

Unity is our chosen game engine due to its robust features and cross-platform capabilities. We use Barracuda within Unity to run the ONNX model, ensuring real-time gesture recognition and smooth gameplay.

03.

Proton Fusion provides reliable and efficient networking solutions for our multiplayer game. It allows players to connect and interact in real-time, enhancing the collaborative and competitive aspects of the game.





Our team designed and created all game assets, including character models, environments, animations, and visual effects for spells. Each element (Fire, Earth, Lightning, Water) had unique visual themes and effects to enhance player immersion.



The game was developed using the Unity engine, chosen for its powerful features and cross-platform capabilities. We implemented core game mechanics, player controls, and the overall game environment. The integration of the gesture recognition system with Unity was a key focus.



We selected the YOLO model for its high accuracy and speed, crucial for real-time gesture recognition in our game. The model was trained using the annotated gesture data, involving multiple stages of data preprocessing, training, and validation to achieve high performance.



We held several brainstorming sessions to design the game mechanics, focusing on elemental interactions, spell types, and multiplayer dynamics. The goal was to create balanced and engaging gameplay where each element has distinct strengths and weaknesses.



The final phase involved integrating all components: gesture recognition, game mechanics, assets, and multiplayer functionality. Extensive testing and iteration were conducted to ensure seamless interaction and a smooth gaming experience. We polished the game by refining user interfaces, optimizing performance, and fixing bugs.



We gathered extensive gesture data from a diverse group of users to ensure the robustness and accuracy of our model. This involved capturing various hand movements in different lighting conditions and environments. We used cameras and motion sensors to record the gestures, annotating each gesture type for the model training process.



# Mind map

Exploring creativity



## Weaknesses

The technical complexity of integrating machine learning with Unity demands continuous optimization and extensive data collection for accurate gesture recognition. Ensuring consistent performance across various hardware configurations can be challenging. Additionally, the longer development cycle required for this innovative project may delay market entry and updates.

## Strengths

Our game leverages innovative gesture recognition for an immersive experience, using advanced machine learning models like YOLO for real-time accuracy. The engaging multiplayer features, powered by Proton Fusion, enhance social and competitive play. The versatile game design, with diverse elemental spells, offers deep strategic choices, ensuring a captivating player experience.

## Threats

Rapid technological advancements may render current systems obsolete, requiring constant updates. The competitive gaming industry demands continuous innovation. Market fluctuations and changing player preferences could impact success. Security and privacy concerns related to data collection need stringent measures to maintain trust.


## Opportunities

The rising interest in VR/AR and gesture-based technologies opens up new platform opportunities. Educational applications of our immersive mechanics can reach new markets. Building a strong player community through online engagement and updates fosters loyalty. Technological partnerships can enhance capabilities and expand reach.



# Final reflections and future steps



The background is a light blue grid with various hand-drawn blue doodles. At the top, there are several overlapping circles and loops. On the right side, there are some starburst-like shapes and horizontal lines. At the bottom, there are more circles, a wavy line, and several downward-pointing chevrons.

**Thank you  
very much!**