TIU Consulting
Digital & Application Management Solutions

CASE STUDY

Extended Reality (XR) Enhanced Axe Throwing Experience

Axe Throwing Sport and Entertainment Venue

This client operates entertainment venues for axe throwing and escape rooms. Open to amateurs and serious professionals, the client wants to enhance the experience to the gaming and social media savvy players. They engaged TIU to digitally transform this physical world throwing sport into a new digital world experience.

Project Goals

The goal of this project was to develop a scalable solution that provides the XR experience that immerses the player into a multilevel and multiplayer gaming experience using the players own axe, stars or knives.

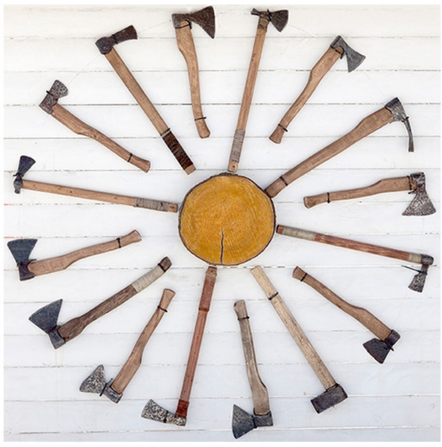
The client wanted a natural response time to actionable target strikes and games that interact with successful, as well as missed, target throws.

A library of games that offer static or animated 3D play offer endless entertainment.

Project Results

TIU utilized DevSecOps to develop a secure and robust cloud-based system and using custom AI and algorithms to exceed the client's expectations. Combined with a projector and intelligent cameras the thrown weapons are recognized within a very high location accuracy. Apps are now being added for remote user lane reservations and social media sharing of the game play.

Game categories and themes are being designed to appeal to a variety of skill and user interests.



Project Challenges

AI development to accurately locate and identify the thrown weapon.

Associate the location of the target strike with the projected video image.

Admin portal to control access of games by a large number of venues.

Allow for coordinated interaction of multiple players on target lanes that may or may not be at the same venue.

Actions Taken

Several algorithms were evaluated and tested until with customization the optimum solution was selected.

User selects the type of weapon used during play with the AI selecting the correct algorithm weapon profile for the best game play.

Using Azure allows total admin control based on a venue and lane count.

Advanced cloud game play design architecture.

Solution Process

1 New Algorithm

TIU developed a new object recognition algorithm that considers many factors of the weapon shape, time to target, striking location and more. To provide a very realistic reaction and feedback for autoscoring and game progression.

2 Simplified Player Interface

TIU designed a simple UI for player registration and login either, from the app or at the venue. For lane reservation, game selection and multiplayer assignment. Saving game data for continued game play.

3 Admin Portal

Very important to the client to have an easy-to-use administrative portal to manually register players for walk in players, lane reservations and to manage access to games and lane count at other venues leasing the XR system.

Digital Tools & Technologies

Unity3D platform, SQLite, PUN Photon, Visual Studio 2019

Future Projects

1. **Scheduling and login app**
2. **Multisite and multiplayer competition**
3. **Continuous Game Creation**
4. **Weapon throwing introduction and training**