**AR Gym Card Project README**

**Overview**

The AR Gym Card project aims to revolutionize traditional gym workout routines by leveraging augmented reality (AR) technology. By scanning AR-enabled gym cards, users can access a range of interactive exercises, enhancing their workout experience with real-time guidance and animations.

**Features**

* **Real-time exercise animations triggered by scanning the card**
* **Interactive elements to guide proper form and technique**
* **Educational content on exercise benefits and proper execution**
* **Support for various workout routines**

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**Introduction to Augmented Reality (AR)**

Augmented Reality (AR) overlays digital information onto the real world, enhancing user perception and interaction. It revolutionizes industries like fitness, education, and healthcare by blending virtual elements with physical environments.

**Objectives and Goals**

* Enhance traditional workout routines with AR technology
* Provide educational value on exercises and fitness
* Increase user engagement through interactive features

**Target Audience and User Experience**

* Fitness enthusiasts, personal trainers, and beginners
* Design for intuitive user interactions
* Ensure accessibility for users of all ages and fitness levels

**Key Features**

* Real-time exercise animations
* Interactive elements for proper form guidance
* Educational content overlay
* Support for various workout routines

**Explanation of Mixamo**

Mixamo is an online platform by Adobe that provides tools for rigging and animating 3D models.

**Steps Involved**

* Upload and customize the 3D model
* Use Mixamo's automated rigging tools

**Importance**

Rigging ensures realistic and fluid animations, enabling interactive elements in AR.

**Overview of Animation Types**

* Choose animations such as squats, lunges, and push-ups

**Selection Criteria**

* Relevance to workout routines
* Compatibility with Unity's animation system

**Integration Process**

* Export animations in FBX format
* Import animations into Unity
* Set up animation controllers

**Importance of Unity**

Unity offers robust tools for AR development and supports cross-platform compatibility.

**Initial Setup Steps**

* Create a new Unity project with AR support
* Configure the initial scene layout

**Integration of Plugins and Assets**

* Install AR Foundation or Vuforia
* Manage and import essential assets

**Introduction to Vuforia**

Vuforia is a powerful AR development platform with advanced tracking capabilities.

**Integration Steps**

* Download and integrate Vuforia SDK
* Obtain and configure Vuforia developer keys

**Setup of AR Camera and Image Targets**

* Configure the Vuforia AR camera
* Create and manage an image target database

**Definition and Purpose**

Image targets are digital markers recognized by AR applications to overlay virtual content.

**Selection Criteria**

* Choose distinct and high-contrast gym card designs
* Ensure appropriate size and detail level

**Configuration Steps**

* Upload the image to Vuforia's Target Manager
* Import the database into Unity
* Align and calibrate the image target

**Import Process**

* Export the rigged model from Mixamo in FBX format
* Import the model into Unity

**Considerations**

* Optimize model for performance
* Ensure compatibility with Unity's animation system

**Integration of Animations**

* Set up animation controllers
* Assign and test animations

**Creating UI for Gym Card**

**Design Principles**

* User-friendly and intuitive interface
* Interactive components like buttons and text

**Components**

* Buttons, text, and animations for enhanced workout guidance

**Interaction Design**

* Ensure responsive and engaging user interactions

**Integration Process**

* Import and link animations to the model
* Create triggers for animations based on user interactions

**Testing and Refinement**

* Test animations for smooth performance
* Refine as needed for optimal user experience

**Conclusion**

* Successfully integrated AR with traditional gym workouts
* Enhanced exercise routines and educational value

**Lessons Learned**

* Overcame challenges in model rigging and animation integration

**Future Enhancements**

* Explore additional AR features and multiplayer capabilities

**How to Run the Project**

1. **Setup Unity:** Ensure Unity and Vuforia SDK are installed.
2. **Clone Repository:** Clone the project repository to your local machine.
3. **Open Project:** Open the Unity project and configure Vuforia with your developer keys.
4. **Build and Run:** Build the project and deploy it to your target device.

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