Project Brief

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Title: Open Source, Modular Stereoscopic Camera System for Virtual Reality (VR) Lifelogging and Content Creation

Problem Statement:

The current landscape of VR camera systems, offered by major companies such as Meta, Snapchat, Insta360, and soon Apple, presents significant challenges for accessibility due to their proprietary nature and high cost. This exclusivity hinders innovation in both hardware and software within the VR industry, limiting its growth potential.

Project Goals:

- Develop an Open-Source, Low-Cost, and Modular Hardware System: My primary objective is to design and build an open-source, affordable, and modular hardware system tailored for VR content creation. This system will focus on lifelogging by incorporating a snap/clip-on design for spectacle frames. This innovative approach aims to lead the way in expanding the scope of VR lifelogging technology, much like how SlimeVR did with IMU-based tracking for VR.
- Create a Prototype Lifelogging VR Software: In conjunction with the hardware, I will develop prototype VR software for viewing the recorded content on a desktop PCVR platform. The software will ideally include metadata auto-tagging capabilities using scene/object detection, enhancing content indexing and search efficiency.

Scope:

Hardware: The project encompasses the creation of a hardware system consisting of two small, lightweight cameras and a microphone to be attached to the sides of spectacles. This system will include robust wiring to facilitate connections to necessary components, such as power management/battery solutions and the microcontroller unit (MCU), central processing unit (CPU), or motherboard.

Software: The software component of this project will involve the development of a side-by-side (SBS) video player and search software, leveraging sophisticated features built using the Godot game engine.

Features:

1. 1080p 60fps SBS Video Capture: The hardware will be capable of capturing high-quality stereoscopic (3D) video at 1080p resolution and 60 frames per second, ensuring a visually immersive experience.
2. Immersive Surround Sound Capture: The integrated microphone system will capture immersive surround sound, enhancing the overall lifelogging and content creation experience.
3. Hot-Swappable Battery System: To provide continuous operation and flexibility, the hardware will feature a hot-swappable battery system, ensuring extended usage periods without interruption.

Demographic Target:

The project's target audience includes:

1. VR Enthusiasts: Individuals passionate about virtual reality technology and its applications.
2. VR Technology Hobbyists: Hobbyists interested in exploring and tinkering with VR technology.
3. Content Creators: Individuals looking to produce immersive VR content for various purposes.
4. Project Creator (Myself): The project creator will serve as an end-user and tester of the system.

This project aims to democratize VR content creation by providing an open-source, affordable, and versatile solution accessible to a wide range of users within the VR community. It strives to contribute to the advancement of VR technology while fostering innovation and inclusivity in the field.