***Cover Page***

Title

Name

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### Executive Summary

**- Problem/Opportunity**  
In the healthcare industry, there is an increasing need for a system that can track users' eye movements to support various clinical and research applications, such as diagnosing visual disorders or studying cognitive responses. The current solutions are either too expensive or lack sufficient accuracy for real-time eye-tracking data collection.

- **Organization’s Goal and Strategy**  
The goal of the organization is to develop a cost-effective and accurate mobile eye-tracking application that can collect real-time data for machine learning models, thereby contributing to healthcare research and improving diagnostic capabilities.

- **Project’s MOV (Measurable Organizational Value)**  
The project's MOV is to improve the accuracy of predicting where people's gaze is focused by 30% compared to existing solutions. This aligns with the organization's strategy of leveraging technology to provide innovative healthcare solutions.

**- Alternatives Analyzed**

* Solution 1: Mobile Eye-Tracking Application (Capturing images)

Develop an in-house mobile application that improves real-time eye-tracking by capturing images and enhancing user interaction on mobile devices.

* Solution 2: Use Existing Eye-Tracking Software

Integrate a pre-built eye-tracking SDK (Software Development Kit) into the mobile application instead of building the functionality from scratch.

* Solution 3: Mobile Eye-Tracking Application (Recording videos)

Develop a mobile eye-tracking application that collects data by recording videos, enabling more detailed analysis of eye movements.Recommended Alternative.

**- Recommended Alternative**

The recommended option is Solution 1: Mobile Eye-Tracking Application (Capturing Images). It allows full customization for the machine learning model, ensuring data collection aligns with project needs. Building the feature in-house increases the team's familiarity with the code, making future maintenance easier. This solution also enhances data security and privacy compliance. By transmitting images instead of videos, it reduces bandwidth usage and lowers the backend's workload, improving overall efficiency.

### Introduction

**- Background/Current Situation/Problem/Opportunity**

The healthcare industry is increasingly adopting AI and machine learning to improve diagnostics and research. However, current eye-tracking solutions are either prohibitively expensive or fail to offer the real-time accuracy required for clinical applications. Stakeholders, including healthcare providers and researchers, are dissatisfied with the high costs and limitations of these existing systems. This frustration has driven the development of a cost-effective, accurate mobile eye-tracking system.

- **Project’s MOV**

The key MOV for this project is to improve the accuracy of predicting where users' gaze is focused by 30% compared to existing solutions, thereby enhancing data accuracy while keeping costs lower. This solution will help healthcare professionals and researchers improve their work by offering better eye-tracking data collection tools.

- **Supporting Organizational Goals and Strategy**

Achieving this MOV aligns with the organization's goal of advancing healthcare innovation through cost-effective and high-performance solutions. By developing an accurate mobile eye-tracking tool, the organization strengthens its leadership in AI-driven healthcare technologies, directly supporting its strategy of leveraging technology for improved healthcare solutions.

**- Objectives of This Business Case**

The primary objective of this business case is to analyze and compare various development options for the eye-tracking system and recommend the most feasible solution. The document presents the project background, evaluates alternatives, and offers a final recommendation based on cost, benefits, feasibility, and risk.

# **Alternatives**

**- Solution 1: Mobile Eye-Tracking Application (Capturing Images)**

Develop an in-house mobile application that improves real-time eye-tracking by capturing images and enhancing user interaction on mobile devices. This approach allows full customization for machine learning model integration and data transmission to the backend.

**- Solution 2: Use Existing Eye-Tracking Software**

Integrate a pre-built eye-tracking SDK (Software Development Kit) into the mobile application. This option leverages third-party software, reducing development time, but may offer less control over customization and adaptation for specific project needs.

**- Solution 3: Mobile Eye-Tracking Application (Recording Videos)**

Develop a mobile eye-tracking application that collects data through video recordings. This method enables more detailed analysis of eye movements but involves higher data transmission and storage requirements compared to image-based solutions.

# **Analysis of Alternatives**

The alternatives are analyzed based on Total Cost of Ownership (TCO), Total Benefit of Ownership (TBO), feasibility, and associated risks. The analysis is quantitative, considering both direct and indirect costs and benefits, as well as how each option aligns with the organization’s long-term strategy.

**- Solution 1: Mobile Eye-Tracking Application (Capturing Images)**

* TCO: $20000
* TBO: $50000
* Feasibility Analysis: High feasibility, as the organization has the necessary resources and skilled developers to build and customize the application in-house.
* Risk Analysis: Moderate risk, primarily around development time and integration with machine learning models, but manageable due to full control over the process.
* Score: 85

**- Solution 2: Use Existing Eye-Tracking Software**

* TCO: $50000
* TBO: $50000
* Feasibility Analysis: Medium feasibility, as the project depends on third-party cooperation and the customization capabilities of the external SDK.
* Risk Analysis: High risk, due to vendor dependency for customizations, future updates, and data privacy concerns.
* Score: 60

**- Solution 3: Mobile Eye-Tracking Application (Recording Videos)**

* TCO: $25000
* TBO: $50000
* Feasibility Analysis: Low feasibility, as video data collection and transmission require high storage and processing power, which may exceed project constraints.
* Risk Analysis: High risk due to complexity in data management, bandwidth requirements, and higher backend workload.
* Score: 70

#### ****- Proposed Recommendation****

Based on the analysis, the recommended option is Solution 1: Mobile Eye-Tracking Application (Capturing Images). This solution provides the highest potential return on investment (TBO), high feasibility with full control over development, and aligns best with the organization’s long-term goal of building proprietary healthcare technology. The manageable risks and customization flexibility make it the most suitable option compared to the alternatives.