|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **ID** | **Risk** | **Risk Description** | **Likelihood** | **Impact** | **Severity** | **Owner** | **Mitigation** | **Status** |
| 1. | Dataset Quality | Insufficient or low-quality dataset affects model performance. | High | High | High | Data Scientist | Use augmented datasets, collect diverse and labeled data, and verify quality during preprocessing. | Open |
| 2. | Real-Time Performance | System fails to achieve low latency during real-time recognition. | Medium | High | High | Myself | Optimize model size using TensorFlow Lite, simplify pipeline, and test on multiple hardware setups. | Open |
| 3. | Gesture Recognition Accuracy | Inconsistent recognition of gestures due to hand variability or poor lighting. | High | High | High | Myself | Use data augmentation (e.g., rotation, scaling), train model with diverse samples, and apply adaptive histogram equalization for lighting adjustments. | Open |
| 4. | Tool/Library Compatibility | Compatibility issues with software libraries on specific hardware (e.g., M1 chip). | Medium | High | High | Myself | Use ARM-optimized tools, test libraries on target hardware early, and document dependency versions. | Open |
| 5. | Integration Issues | Difficulty integrating hand detection, recognition, and text output into a seamless pipeline. | Medium | High | High | Myself | Develop and test individual components first, use modular coding practices, and perform regular integration testing. | Open |
| 6. | Scalability Challenges | Difficulty in adding new gestures or expanding functionality. | Low | Medium | Low | Myself | Use modular design for adding new gestures, maintain clean documentation, and adopt scalable frameworks like TensorFlow or PyTorch. | Open |
| 7. | Timeline Overruns | Delays due to unforeseen technical challenges or expanded scope. | Medium | High | High | Myself | Use Agile methodology for iterative progress, prioritize critical features, and build contingency time into the project plan. | Open |
| 8. | Hardware Dependency | End-users may lack access to high-quality webcams or sufficient computational resources. | Medium | Medium | Medium | Myself | Ensure system runs on basic hardware setups (e.g., 720p webcam, integrated GPUs) and provide hardware recommendations. | Open |
| 9. | User Acceptance | Users find the system complex or inaccurate, reducing its usability. | Medium | High | High | Myself | Gather user feedback through testing, provide a user-friendly GUI, and ensure the system is intuitive. | Open |

**Notes:**

ID values may be useful to refer back to in your final documentation. Number these in order. This register should be included in the appendix

Risk description provides an outline of the issue

Please use Low, Medium and High to identify the risk level and colour code.

Typically the owner will be you, but it maybe the case in team work or other projects that have external clients, other activities may impact on the project

Mitigation implies on how you will manage the risk and to reduce the likelihood of it occurring

Status – has the risk event now passed. It should indicate an Open and Closed status.