

12. RISKS AND MITIGATION

Risk	Description	Mitigation Strategy
Sensor Malfunction or Inaccuracy	Inconsistent readings due to lighting, surface reflectivity, or hardware issues	<ul style="list-style-type: none">a) Regular calibration under varying conditions.b) Use redundant sensors or sensor fusion.c) Implement error-handling in code.
Power Supply Issues	Battery drain or voltage drops causing system failure	<ul style="list-style-type: none">a) Monitor battery voltage in real time.b) Optimize power usage in code - Keep spare batteries on hand.
Software Bugs and Instability	Unexpected behaviour due to bugs or incomplete testing	<ul style="list-style-type: none">a) Modular programming with good documentation.b) Conduct unit and integration tests.c) Use version control.
Hardware Damage	Mechanical failure or wear and tear from testing	<ul style="list-style-type: none">a) Use durable materials and proper mounting.b) Regular physical inspection.c) Keep spare parts available.
Environmental Variability	Performance drops in outdoor or non-lab settings	<ul style="list-style-type: none">a) Test in diverse environments early.b) Use adaptive thresholds and calibration techniques.
Team Coordination and Time Constraints	Delays from poor communication or uneven workload	<ul style="list-style-type: none">a) Hold regular team meetings.b) Use project management tools (e.g., Trello, GitHub, MS-PM).c) Allocate buffer time for issues.