Smart Pest Repeller

Andrew Albritton

Michael McNeil

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**Schedule and Validation**

REVISION – Draft

Interface Control Document

for

Smart Pest Repeller

Prepared by:

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Author Date

Approved by:

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Project Leader Date

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

John Lusher II, P.E. Date

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

T/A Date

**Change Record**

| **Rev.** | **Date** | **Originator** | **Approvals** | **Description** |
| --- | --- | --- | --- | --- |
| **0** | 9/25/23 | ALL |  | Draft Release |

***Schedule:***

| Work | Start Date | Owner | Status | Date to be Completed |
| --- | --- | --- | --- | --- |
| CONOPS | 9/12/23 | ALL | Done | 9/14/23 |
| FSR | 9/25/23 | ALL | Done | 9/28/23 |
| ICD | 9/25/23 | ALL | Done | 9/28/23 |
| Order Project Parts | 10/2/23 | ALL |  |  |
| Midterm Presentation | 9/24/23 | ALL | Done | 9/25/23 |
| Acquire Data-Sets for Training | 9/25/23 | Andrew |  | 10/9/23 |
| YOLOv5 implementation on PC | 10/2/23 | Andrew |  | 10/9/23 |
| Power PCB Design Complete | 9/29/23 | Michael |  | 10/9/23 |
| Finalize PCB for Emitter Unit | 10/2/23 | Mel |  | 10/16/23 |
| Status Update Presentation | 10/?/23 | ALL |  | 10/12/23 |
| Generate Signals | 10/11/23 | Mel |  | 10/13/23 |
| Send Signals to Emitter | 10/16/23 | Mel |  | 10/20/23 |
| Train YOLOv5 model | 10/9/23 | Andrew |  | 10/23/23 |
| Power PCB Assembly | 10/10/23 | Michael |  | 10/28/23 |
| Implement YOLOv5 model on Coral board | 10/23/23 | Andrew |  | 10/30/23 |
| Implement Emitter on PCB | 10/23/23 | Mel |  | 10/30/23 |
| Power PCB Circuit Testing | 10/29/23 | Michael |  | 11/6/23 |
| Set up camera with motion sensor | 10/30/23 | Andrew |  | 11/6/23 |
| Develop control logic for post processing | 10/30/23 | Andrew |  | 11/10/23 |
| Final Presentation | 10/30/23 | ALL |  | 11/2/23 |
| Complete Processing Subsystem Validation | 11/10/23 | Andrew |  | 11/20/23 |
| Final Demo | 9/12/23 | ALL |  | 11/20/23 |
| Final Report | 11/20/23 | ALL |  | 11/27/23 |

***Validation Plan:***

| **Task** | **Specification** | **Result** | **Owner** |
| --- | --- | --- | --- |
| Training Verification | Goal of 90%>= precision  or  Goal of .1 >= loss | PASS | Andrew |
| Camera Verification | make sure 3 photos are taken per second |  | Andrew |
| Motion Verification | Ensure camera activates from motion control |  | Andrew |
| Camera MLA processing verification | Ensure precision is maintained post- implementation  (Generalization of model usually yields 10-20% lower probability of detection) |  | Andrew |
| DC/DC Voltage Converter Verification | Verify that converter can take in various input voltages and continue to output 5V and 2A |  | Michael |
| Battery Charger Verification | Verify battery charger charges battery |  | Michael |
| Fuel Gauge Indicator Verification | Verify fuel gauge tracks fuel and indicates when batteries need to charge |  | Michael |
| Power PCB Verification | Verify PCB circuit connects and system functions as intended |  | Michael |
| Signal Verification | Establish signal generator can produce the three separate frequencies required |  | Mel |
| Amplifier Verification | Verify signal is appropriately amplified before reaching emitter |  | Mel |
| Emitter verification | Make sure emitter can emit required frequencies |  | Mel |
| Emitter PCB verification | Verify circuit behaves like individually verified componentes did |  | Mel |