

EMSD Drone Project I&T Solutions

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Management Summary

Problem

- Insufficient efficiency for manually operate drones and inspect abnormality
- Inspecting abnormality requires profusely man powers to evaluate
- Manage drones and inspect manually for the deteriorating conditions of boundary fencing and detecting anomaly objects at roof-tops of buildings

Solution

- Develop an automated Unmanned Aerial Vehicle (UAV)-based, also called drones, inspection system
- The system is standalone, capable of detecting anomalies at roof-tops and the conditions of boundary fencing automatically
- Therefore, a multi-sensor system with image processing and analytics is developed, tested and applied at the application use-case of the customer

Management Summary

Project Goal

The project aims at developing and deploying an automatic drone-based detection system for detecting suspicious object:

- Concept development and feasibility check of a drone-based solution
- Development of the solution to the specific use-case of the customer requirements (e. g. training of imaging models)
- Deployment and ramp-up of the first product onsite

Our Approach

We suggest to begin with a concept design and technical feasibility stage. After that, a prototype shall be developed and subsequently transformed into a robust, long-term usable security inspection system.



Our Solution Overall system

UAV/Drone Port



- Drone Port for Drones/UAVs
- Physical Repairs/Checks

Command Center



- Flight Schedule (Time and Route)
- Image Processing and Analytics
- Alert System for breaks/anomalies



UAV in flight



- UAVs for inspection of fence and roof-tops

Our Solution

Technical Highlight for Image Processing

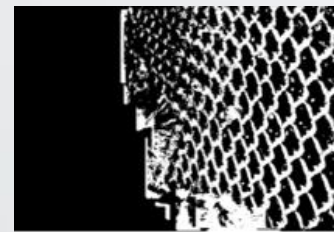
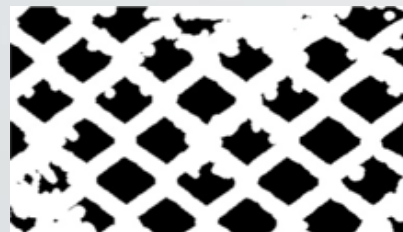
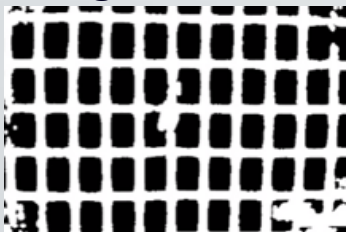
Image Processing includes

- Development of imaging algorithm using Camera setup
- Multiple layers and data fusion for processing the sensor units
- Investigation of additional and/or alternative sensors for increase of detection accuracy and reliability

Detected Lattice



Foreground Mask



Project Timeline and Deliverables

Stage 1 - Concept and Feasibility

- Concept development and detailed technical feasibility check of a UAV-based solution in accordance to the specific requirements of the customer deployment site

Stage 2 - Product Development UAV System

- Development of the solution by integration of hardware components as well as the development of the software system for image recognition

Stage 3 - Software Development of Algorithm and Models

- Development of the algorithms and models for the image processing and the detection of defects in fences structures and roof-top premise

Stage 4 - Deployment of Application Use-Case

- Ramp-up of the first prototype/product at premise and improvement of the system according to customer requirements

About Us

- The Hong Kong Productivity Council (HKPC) is a multi-disciplinary organization established by statute in 1967
- Promote productivity excellence through integrated advanced technologies and innovative service
- Expert in facilitating Hong Kong's reindustrialisation and focusing on R&D, IoT, big data analytics, AI and Robotic technology development, digital manufacturing, etc.,
- Upgrade business performance, lower operating costs, increase productivity and enhance competitiveness



Our Vision:

Be the best solution partner

Our Mission:

Enhance business productivity and competitiveness

3-Pronged Strategy

Collaborating with Stakeholders

Focusing on Areas of Excellence

Scaling up Platforms

Thank you!



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