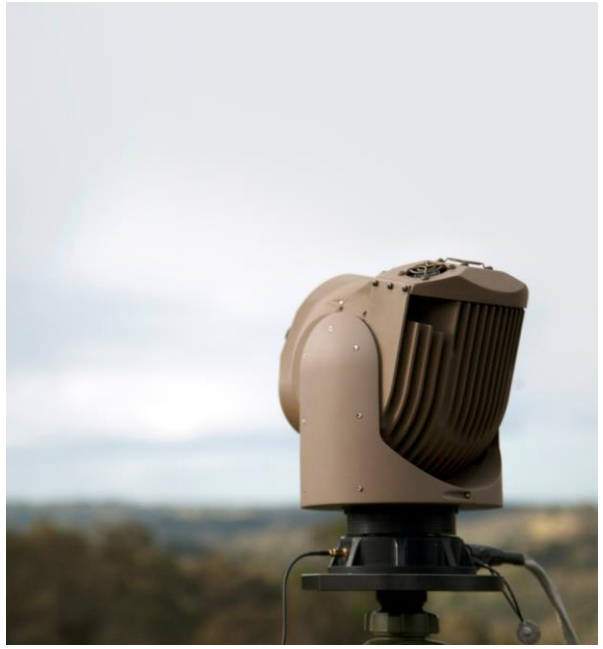
Formerly UAV Vision

Background

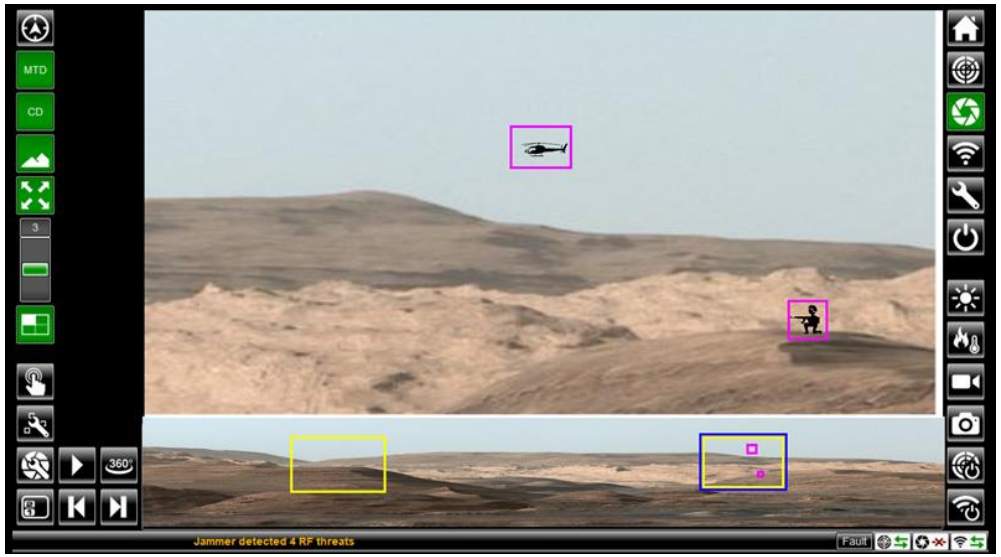
- Founded as UAV Vision 2006 in Sydney
- Manufacturing UAVs and Camera Systems
- Shifted Focus to Camera Systems in 2009
- Entered the CUAS market in 2017
- Re-Branded as AVT Australia in 2019

Products

CUAS



Airborne ISR cameras



Software

Operational need.

- Long range UAS are only effective if they can operate BVLOS.

- NOTAMs, ground based aviation radio, transponders, high visibility paint schemes and lighting are now relatively standard equipment.

- The “see and avoid” part is currently hard to achieve in small UAVs. This is mainly due to payload and datalink restrictions.

- Easy to carry a gimbal but due to video link data rates, it is possible to either:
  - See a large part of the sky in poor detail or
  - A small section of the sky in high detail.

- This is not effective for “seeing” other aircraft

CUAS software

- Turns out that observing the sky for potentially dangerous UAS is very similar to looking out for air traffic.

- AVT have a product that can visually detect small UAS out to 2kms and then zoom in to see if the UAS is potentially dangerous.

- The detect part of the system was modified to have a wide-angle lens to see a larger portion of the sky with a single camera. A 60^{o} lens enables the system to detect manned single engine sized aircraft out to around 2kms.

- By using 3 cameras, the system can see a full 180^{o} in front of the UAS.

CUAS software

EyeSpy Specifications

- 3 off 13.3Mpixel cameras
- 60^{o} HFoV each camera for total HFoV 180^{o}
- 3 off video processing computers running unmodified CUAS software onboard the UAS.
- Currently have 3 modes: video only, detection using 4208x3160, detection using 1920x1080
- Video sent to the ground is 640x480
- Prototype payload weight 500gms.
- Power consumption 30 watts.

Prototype EyeSpy system

Example frame

Performance

Testing conducted on an Aerosonde UAS (50kts) with a Cessna 172 (100kts) using 1 camera produced the performance:

- Average detection distance: 2km

- Best detection distance: 2.46km

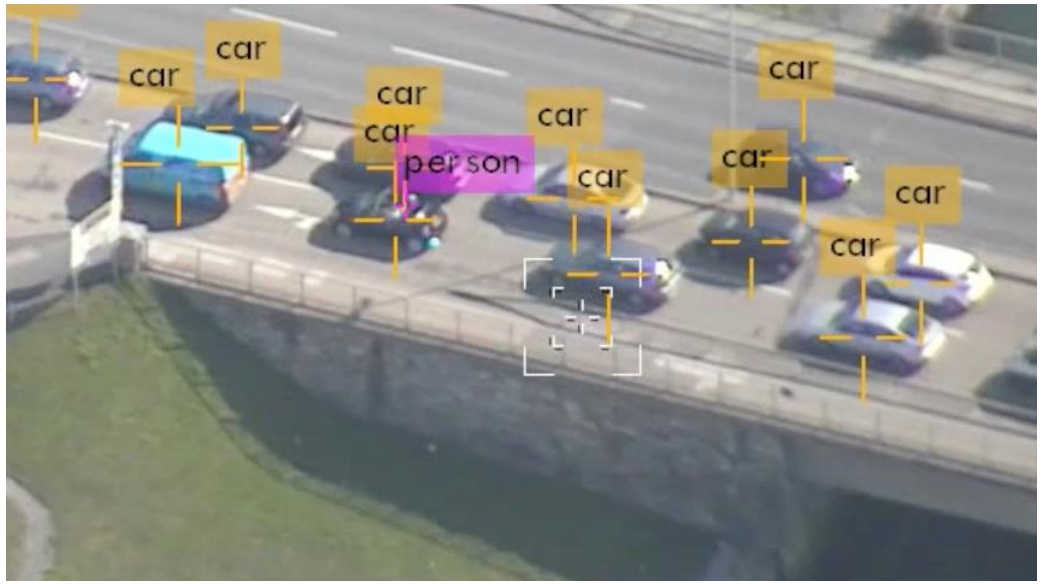
- Worst detection: 1.12km

- At 150kts closing speed 2kms gives 26 seconds to impact.

Possible future improvements.

Better below the horizon performance

Auto Object Classification



- Specific Object Detection
  - Target Filtering
  - Minimize Analyst Workload

Eventually automatic collision avoidance

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