

Challenges in Close-proximity Operation of Manned and Unmanned Aircraft in Shared Space

How does one maximize flexibility of piloted and an increasingly larger number of autonomous aircraft at low altitude in a scalable way?

How does one reduce the manning requirements and safety of existing aircraft?

May 23, 2022

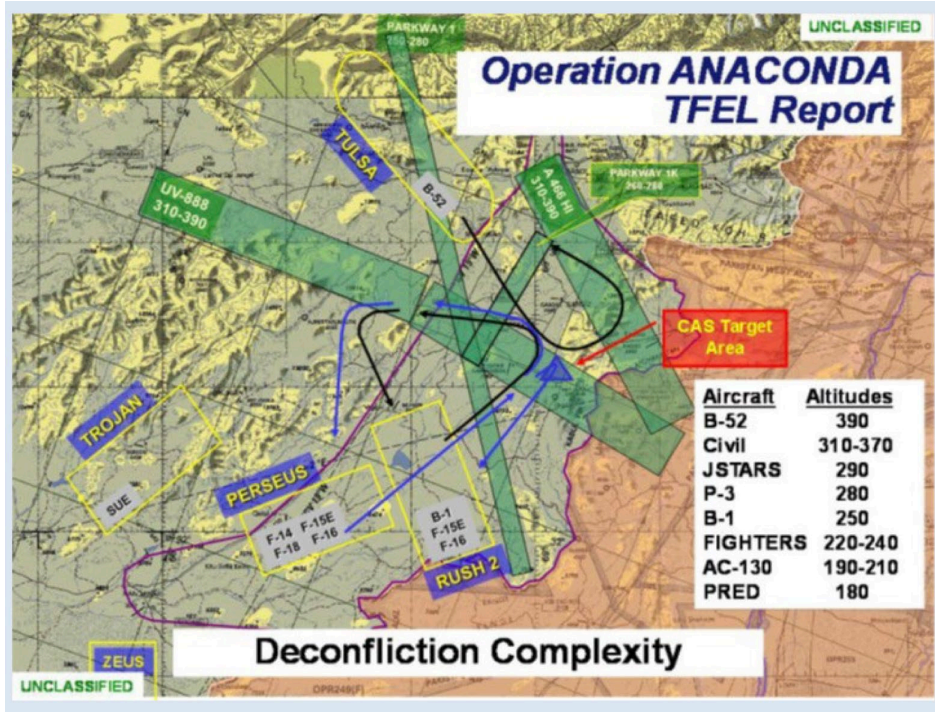
Challenges of Current Approach to

Air space control:

- Too rigid for dynamic situations and for low altitude operation
- Vulnerable to comms-denial
- Not scalable to the increase in the number of smaller autonomous assets

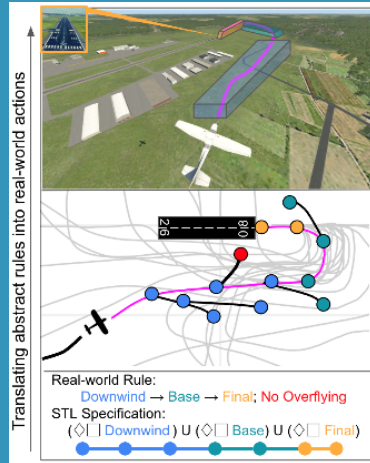
Pilots:

- Helicopters often require two pilots. Want single or no pilot operation.
- Pilot shortage.
- Unmanned assets require large deconfliction area.

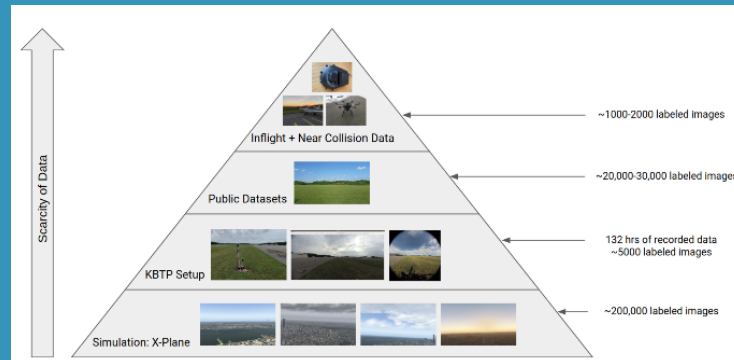


Key Idea: Build an "AI" pilot that can guarantee safe deconfliction and behave as expected in shared airspace.

Formal Specifications
(Safety +
Airspace
Rules)

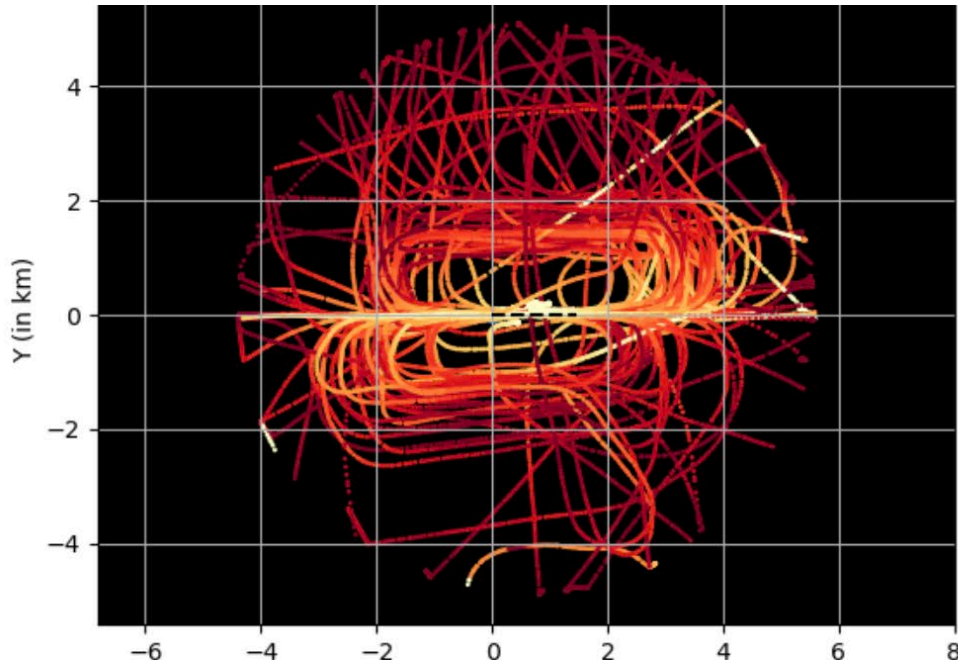


Large Datasets and Simulation

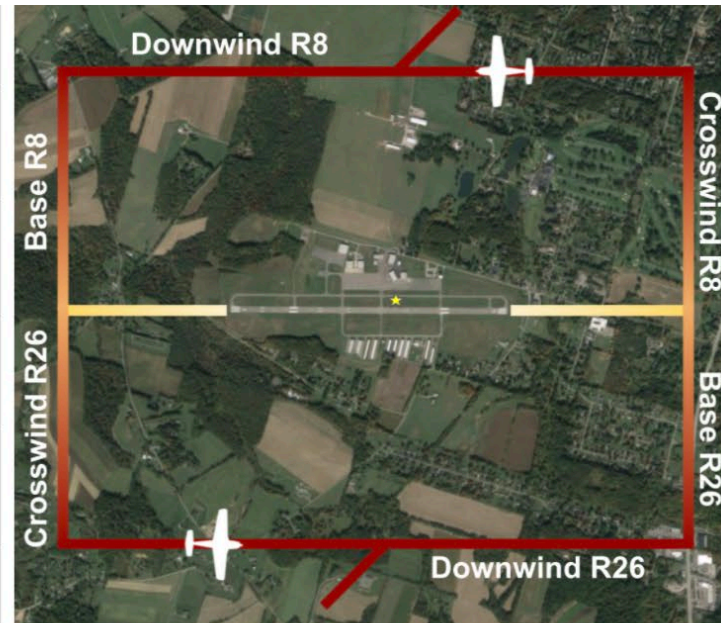


"AI"
Pilot

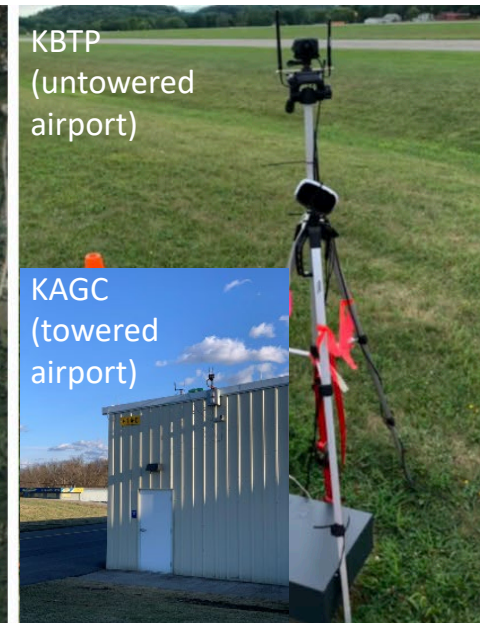
Snippet of data



Typical flight patterns at airports

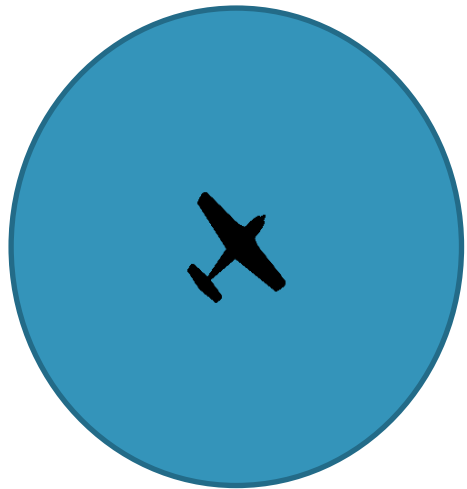


Data collection setup at two airports

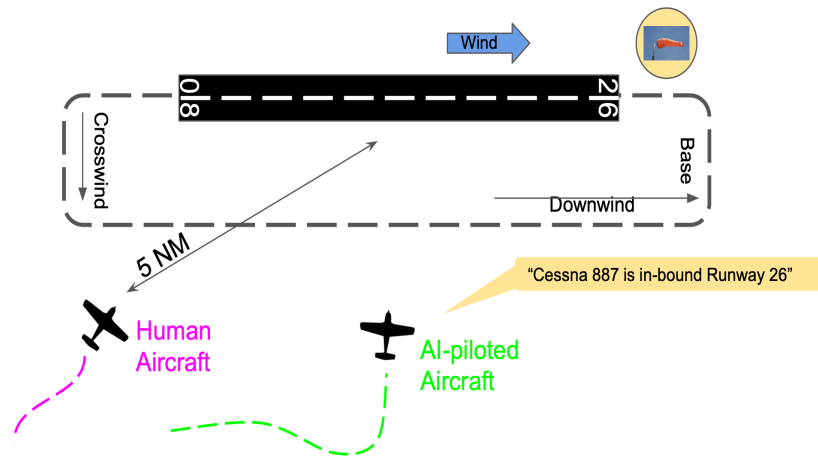


Capabilities in Development

Safe
Self-separation



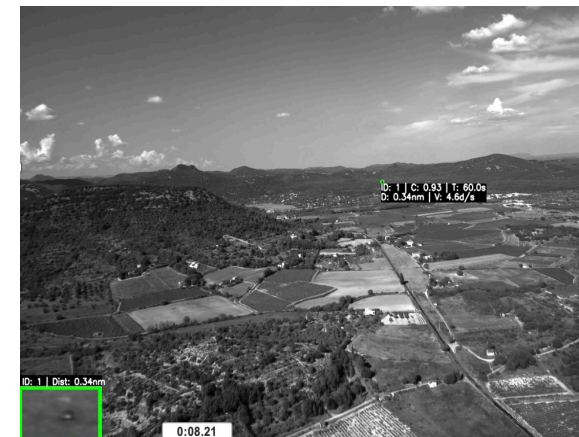
Predicting and
reacting to the
intent of other
aircraft and ATC



Automated
speech
recognition
and production



Visual
aircraft
detection
and tracking



Team and Contact Information

Team:

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