

Raining Drones: Mid-Air Release & Recovery of Atmospheric Sensing Systems

IIS-1925052 & IIS-1924777: 2019-2022

TALKING HEAD

University of Nebraska-Lincoln: Carrick Detweiler, Adam Houston

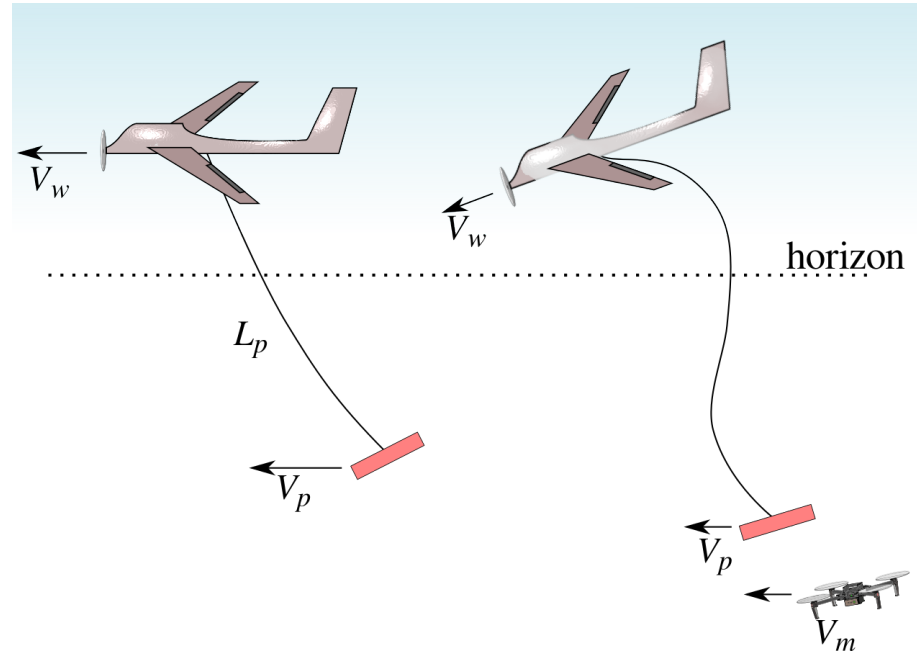
University of Virginia: Sebastian Elbaum

Challenge

- Launch and recover UAS from moving platforms
- Improve atmospheric sensing systems

Solution

- In-flight docking with optimal trajectories
- Software analysis of probabilistic systems
- Characterization of UAS atmospheric sensing



Scientific & Broader Impact

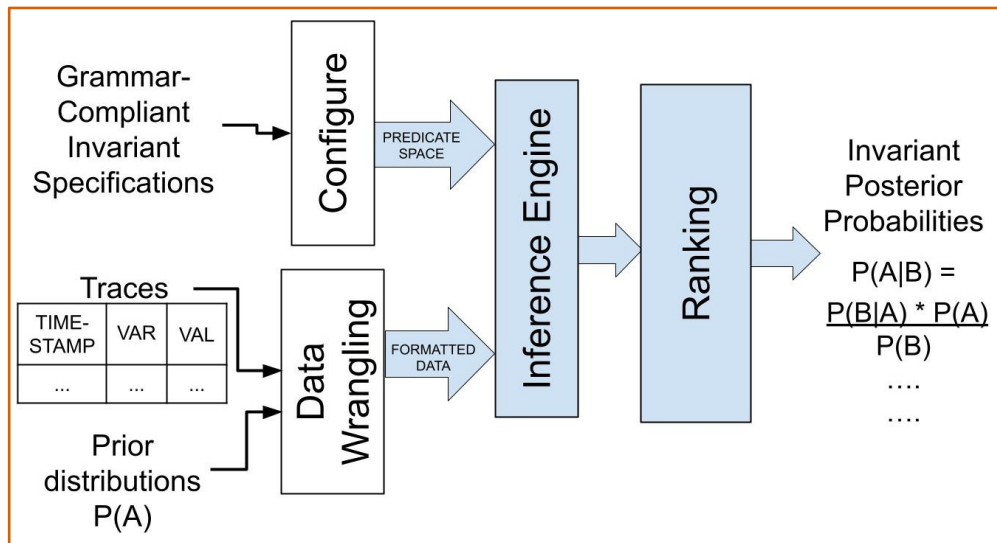
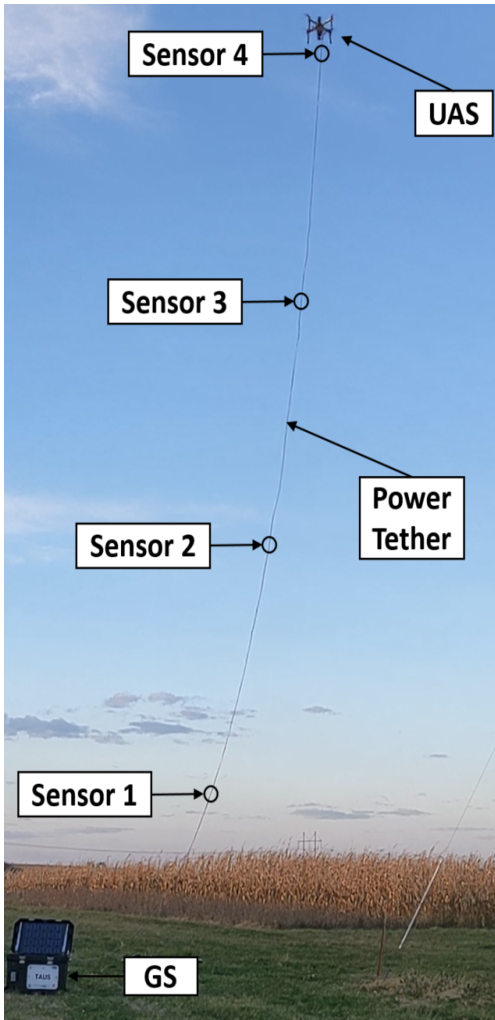
- Enable interactions of heterogeneous UAS platforms while in motion
- Evaluation of UAS based atmospheric sensing systems and sensors
- Improve understanding of the lower atmospheric models
- Generate unprecedented datasets



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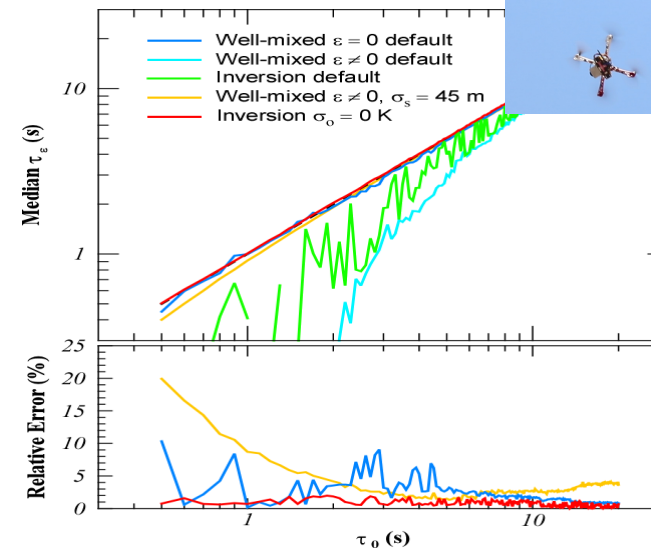
University of Nebraska-Lincoln: Detweiler, Houston; University of Virginia: Elbaum

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Sample invariants:

- $P(\text{UserCommand}=\text{ReturnHome} \mid \text{MachineS}=\text{Target} \ \& \ x\text{-velocity} \geq 0.25) > 0.52$
- $P(\text{UserCommand}=\text{Hover} \mid \text{Machine}=\text{Sweeping} \ \& \ y\text{-velocity} \geq 0.25) > 0.03$



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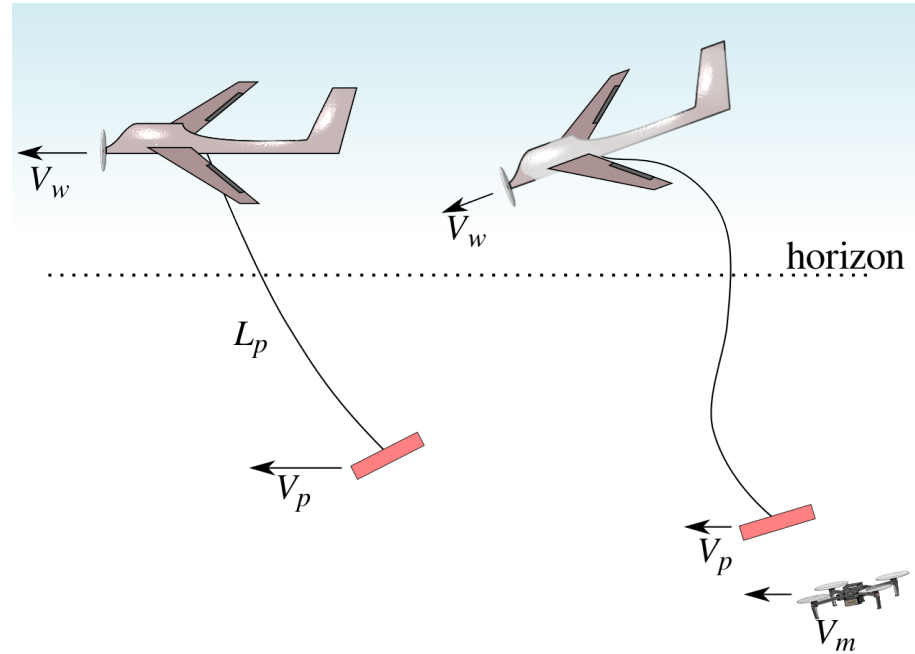
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