- Topic and Motivation
  - Minimum-time flight for VTOL-Drone
  - Push platform to its limits → to explor full potential
  - Use Cases:
    - Rescue
    - Delivery
    - Transportation

Image

- Our Approach (LEO)

- What has been done so far
  - Problem reduced to 2D
  - Steer towards single point
  - Fly along small random trajectories

→ Image: Waypoints connected with lines

Lot of our time spent on Modeling of Reward

- Reward
  - Fly along trajectory → reward progress in each time step.
    (Note: can be negative if drone flies back or falls)
  - This term can have singularities due to sharp edges in trajectory
    → adding small time progression counteracts this
  - reward for reaching waypoint within certain distance
- Penalties (Leo)
- Training Strategy (Leo)
- Plots
  - Reward goes up: converges already after 500 000 steps
  - Success rate: how much drones reach every waypoint → almost 100% after 400 000 steps
  - Successfull drones: completion time goes down and converges
    → drone goes faster
- Video SLOW

  Drone flies along trajectory,
  reaches points,
  changes rotation to reach next point,
  Drone learns to correct missed points.

- First video (Leo)
- Next steps (Leo)