

NTNU SUAS 2023 Video Summary - README

Introduction

This README provides a concise overview of the Norwegian of science and technology team's preparation for the SUAS 2023 (Student Unmanned Aerial Systems) competition, as depicted in their video presentation.

Their project, named "Fender," represents a significant achievement in autonomous drawing platforms. This summary focuses on developing a UAS system designed for autonomous flight, air delivery, and obstacle avoidance with excluding mechanical and manufacturing details.

Team Composition

- **Multidisciplinary Team:** Ascend NTNU comprises both technical and non-technical members, fostering a holistic approach to their UAS project.

UAS Description

- **UAS Model:** The team's latest creation, "Fender," is a heavy-lift carbon fiber hexacopter, chosen for its payload capacity and propulsion redundancy.

- **Object Detection:** Fender's capabilities include advanced object detection using technologies such as Tensor RT, Ros2 nodes, YOLOv5, and ResNet50. The neural network model categorizes objects based on shapes, colors, symbols, and symbol colors, with GPS data aiding in precise object localization.

- **Design Emphasis:** The team's design choices underscore flexibility, ensuring adaptability in various scenarios.

Safety and Testing

- **Safety Measures:** The Ascend NTNU team prioritizes safety with multiple safety mechanisms in place and close communication with relevant authorities.
- **Unity Simulator:** They have developed an in-house Unity Simulator to comprehensively test their UAS system, covering airdrop capabilities, network solutions, and obstacle avoidance without incurring additional costs.
- **Weather Resistance:** The hexacopter is engineered to withstand challenging weather conditions, ensuring reliability during operations.
- **Testing Methodology:** Rigorous testing methodologies involve utilizing onboard cameras and computer processing to validate system performance.

Project Progress

- **Fully Functional UAS:** The Ascend NTNU team proudly presents a fully functional UAS system designed to meet safety and performance targets in preparation for the SUAS 2023 competition.

For more detailed information, technical specifications, or collaboration inquiries, please reach out to the Ascend NTNU team. They are eager to share their progress and insights into their innovative UAS project. Your support and interest in their endeavor are greatly appreciated.

Literature Cited

SUAS Competition. (2023a, June 21). Norwegian University of Science and Technology - Ascend NTNU | SUAS 2023 [Video]. YouTube.

<https://www.youtube.com/watch?v=ue9wTOQ-PTQ>