

Project Title: AI-Powered NLP for Command-to-Code Translation in robotics

Objective

Develop an NLP-driven system to translate natural language commands into executable Python code for controlling a DJI Tello drone.

Expected Results

1. State of the art focusing on NLP for command translation and chatbots.
2. NLP model capable of understanding and translating natural language commands into Python code compatible with the DJI Tello SDK.
3. Integrate a chatbots which provide a user-friendly interface for interacting with the NLP-to-code translation system.
4. Demonstration of successful execution of generated Python code to perform drone operations such as takeoff, landing, movement, and sensor data retrieval.

Methodologies

1. NLP Model Development:

- Study the DJI Tello SDK and Python commands.
- Gather and preprocess a dataset of natural language commands paired with corresponding Python code.
- Train an NLP model (e.g., OpenAI's GPT, Hugging Face Transformers) to interpret user commands.
- Use labeled data mapping natural language commands to Python SDK functions for training.
- Integrate the DJI Tello SDK with the Python-generated code.
- Perform testing on command-to-action accuracy, covering basic and advanced maneuvers.

Documentation and Reporting:

- Document the design, implementation, and results.