

# Enhancing Offshore Wind Inspection and Monitoring with Advanced Sensor-Equipped Drones

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## INTRO

- The objective of our research is to evaluate the effectiveness of using drones outfitted with modern sensors, specifically anemometers, for offshore wind surveys, in order to enhance offshore wind inspection and monitoring.

## METHODS

- Conducted a thorough study of existing drone technology and sensors, specifically anemometers, for offshore wind surveys.
- Designed and constructed a drone platform equipped with ultrasonic anemometers and pitot tubes.
- Conduct flying experiments to determine the efficacy of drones as a substitute for human inspection.

## RESULTS

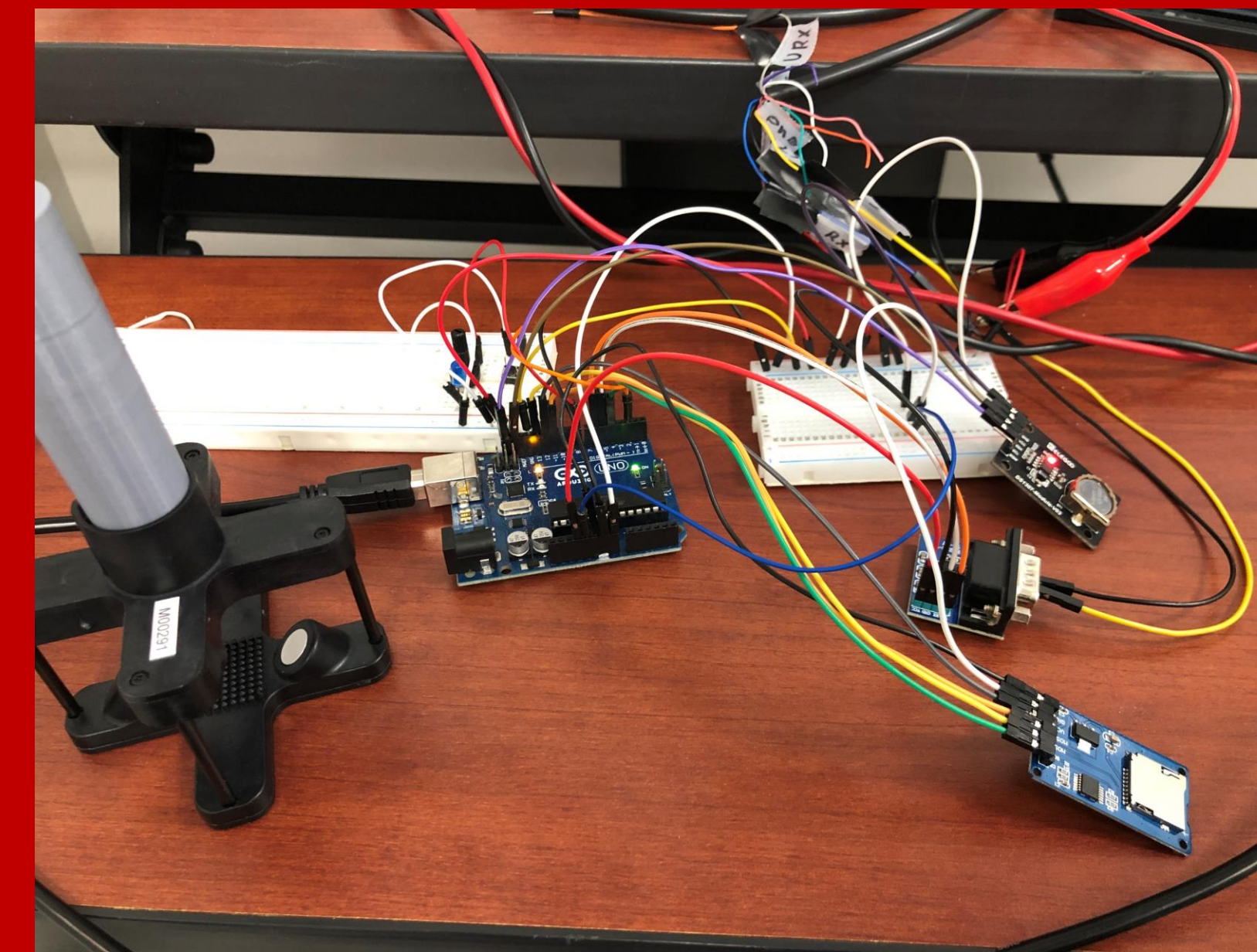
- Current test so far were a success, the sensor suite can gather and log wind data on ground level using custom hardware and software integration.

## DISCUSSION

- Our next steps is to finalize construction and conduct flight tests to be able to compare collected data with ground-based monitoring stations.

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Drone platform being used: DJI M100 along with 3D printed mounting parts



Components:  
Anemometer, Arduino Microcontroller, Serial Data Converter, Micro-SD Reader

Sample Output: Wind Speed (S), Direction (D), Vectors (UVW)

```
S 00.14 D 071 U -00.13 V -00.04 W 00.04 033123201003
S 00.25 D 115 U -00.22 V 00.10 W 00.05 033123201004
S 00.19 D 090 U -00.18 V -00.00 W 00.04 033123201005
S 00.31 D 056 U -00.24 V -00.16 W 00.12 033123201006
```