

# Wind Sensor

(Kiwi Passive Acoustic Anemometer)

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# Overview of Project

Objective: To build a wind sensor that is small, low-cost, reliable, and durable

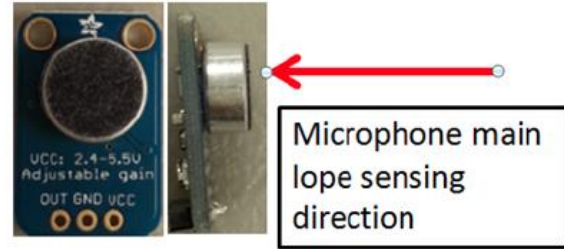
- Wind speed and direction is important for predicting where buildings can be built with natural ventilation
- Build using microphones, so there are no moving parts
- Have a sensor that can detect wind in four directions (2D)
- Integrate to weatherbox

# Previous Work

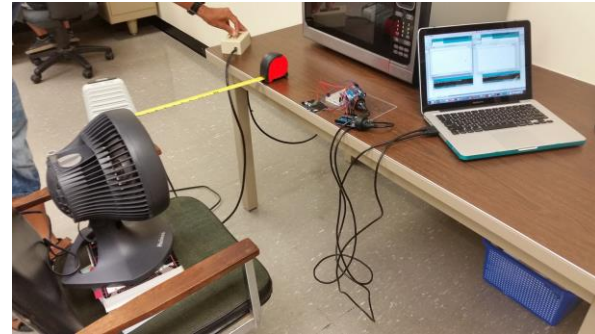
- Arduino Uno used to capture data
- Using peak detector in MATLAB:

$$x(t) \rightarrow \text{MEAN} \rightarrow \oplus \rightarrow |\cdot| \rightarrow LPF \rightarrow y(t)$$

- Use steady-state value of peak detector to find relationship between peak detector output and wind speed



Omnidirectional microphone



Set-up for collecting data

# Goals for the Semester

- Have a more precise and accurate testing station
- Wind sensor will sense direction
- Improve Andy's method of forecasting
  - Filter out noise
  - Better detection for low speeds
- Use an RMS to DC converter chip to replace full bridge rectifier in software
- Build a housing for the wind sensor

# Learning Expectations

- Get experience with Arduino, MATLAB, Eagle CAD
- Get experience in signal processing and filtering
- Testing and designing