

PogodaAI anemometer and wind vane explained

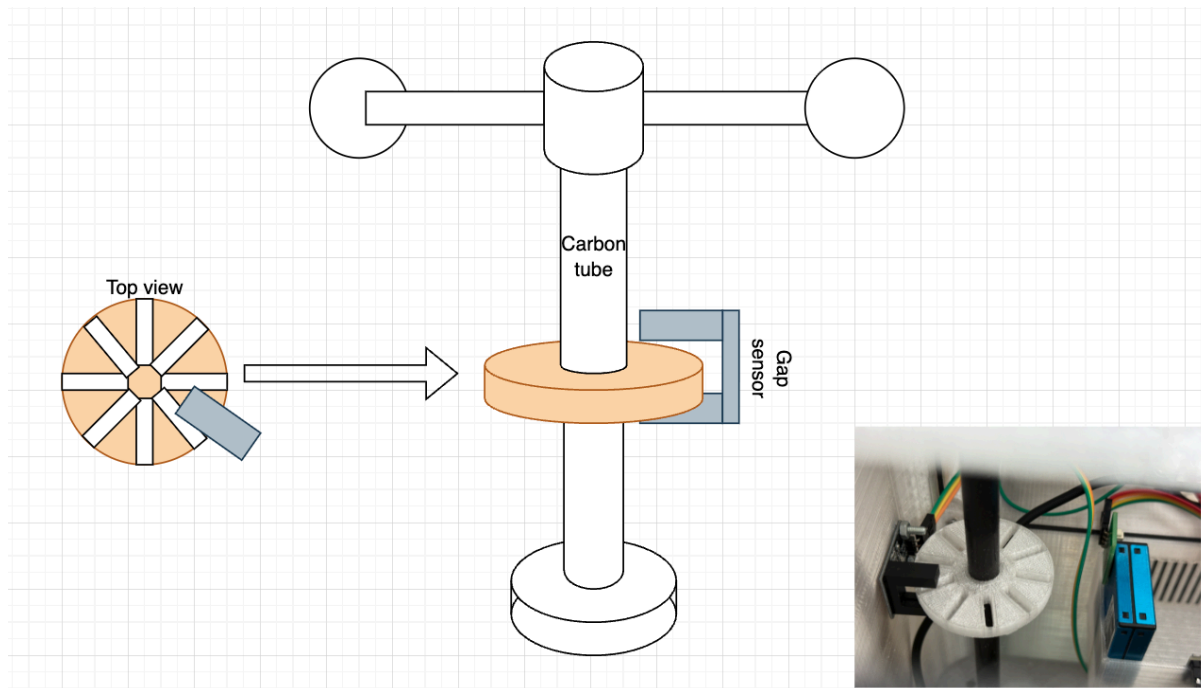
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Anemometer and wind vane were custom designed for cost saving and for better fitment in this project. The only required elements are:

- two carbon tubes (10mm outer diameter) of length at least 250mm each
- 2-4 6200 bearings (preferably unarmed - no rubber/metal guards)
- ~100g of PETG filament
- one neodymium magnet
- magnetometer of your choice
- gap sensor (with at least 10mm of working area)

How does our anemometer work?

As shown on a diagram below - the gap sensor sends data to MCU every time there is a hole in a plastic disc. If we have 12 holes the controller can calculate how fast it is spinning using basic formulas. In a 5 second measurement period all free light passes are counted giving an average speed in those 5 seconds. It is a very easy and durable mechanism.



How does our wind vane work?

The principle behind this mechanism is a bit more complicated. There is a magnet facing the same direction as the arrow on top. When wind rotates the top part, the whole tube moves with this magnet. The magnetometer is placed as close to the rod on the bottom of the main housing. The magnet makes it “think” that the north pole is in the same way as the magnet is facing. Knowing that the weather station is facing south (for the best solar panels efficiency) we can calculate which way the wind is blowing.

