



Intelligent Window Actuator

ME 708 Individual Project



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Background:

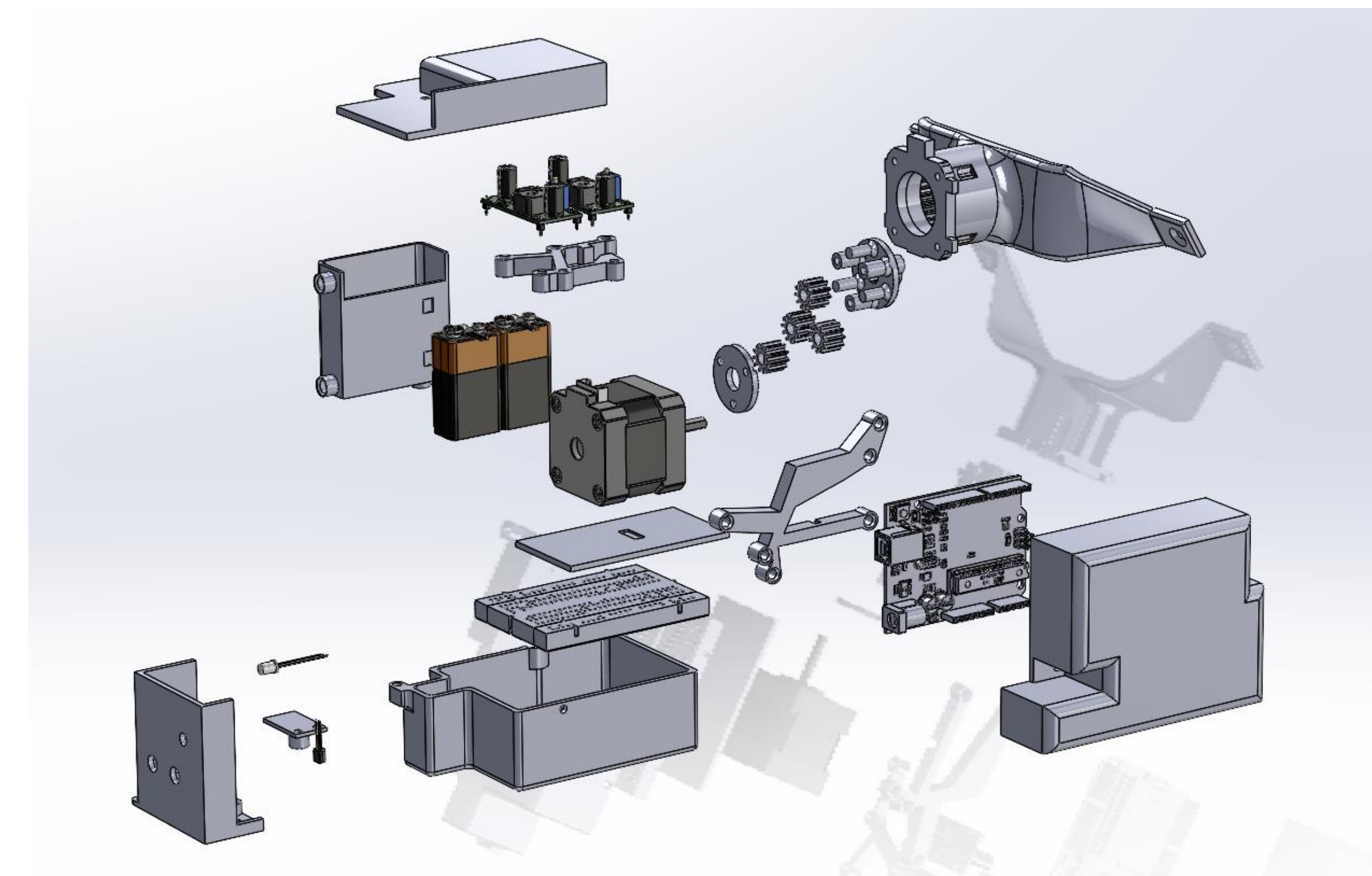
To improve the air conditioning and the room environment in the Jayhawk Towers, airing has shown as helpful. Until now, this always must be done by hand. Thus, an intelligent actuator was developed, which can open/close the window due to user's requirements and sensors data input.

Parts:

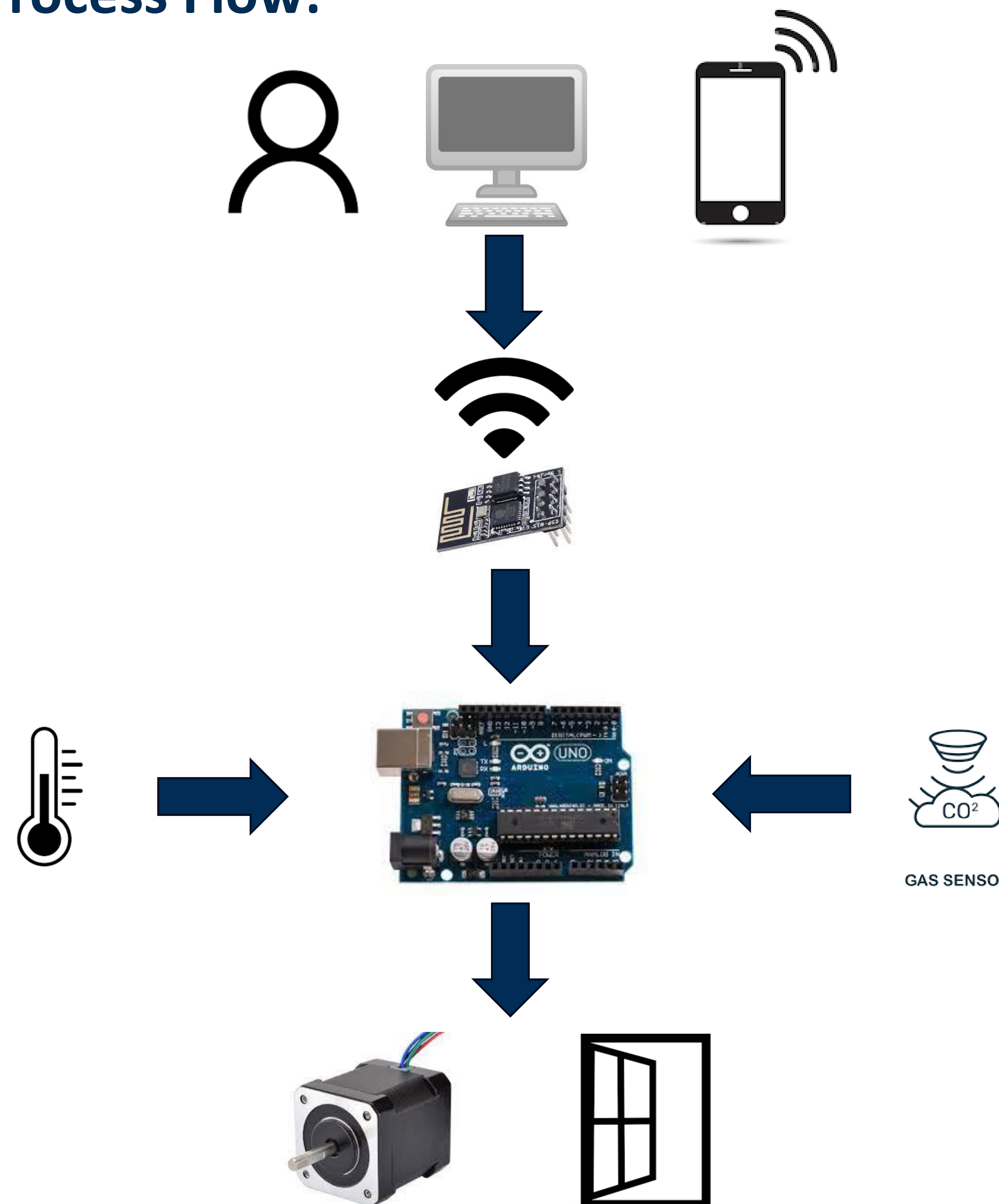
- Arduino Uno
- ESP 8266-01
- Stepper Motor NEMA17
- 2x LMC 2596 DC-DC Buck Converter
- MS1100 Sensor
- 3x TMP36
- 2x 9V Alkaline Battery
- ...

Tools:

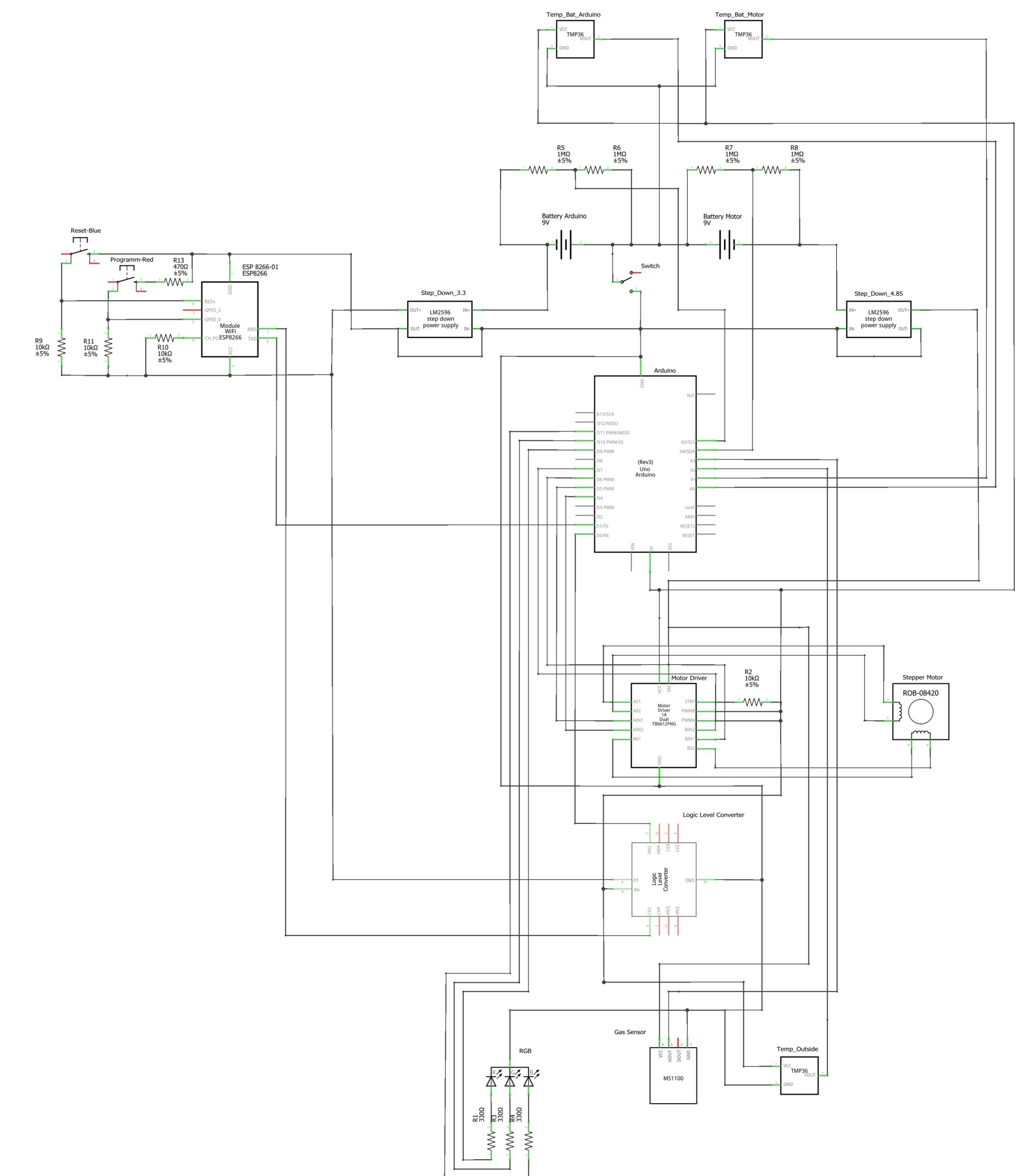
- Solidworks for CAD
- Visual Studio Code as IDE
- KissSoft for Gearbox Design/ Calculation
- Fritzing for Circuit Design
- Firebase (Google) for Remote Control



Process Flow:



Circuit Diagramm:



Next Steps:

- Further improvement of website to control actuator (more modes)
- Connection to air conditioning system
- Motor without gearbox
- LiPo Battery
- PCB to reduce wires and bring all the sensors/converters together

Check out my Instructable:



<https://www.instructables.com/Window-Actuator/>