16-722 Sensing and Sensors
Lab Assignment 2

1/*f* noise

Identify a phenomenon that the scientific/engineering literature says exhibits 1/*f* noise, design an experiment to observe it using the sensor of your choice, and present your results in a traditional laboratory report format (Introduction, Methods, Results, Discussion). A good write-up will typically include at least these elements:

- your target application (what phenomenon will it demonstrate?);
- your conceptual design (hardware and software);
- the components you actually used;
- your Arduino (or other microprocessor) code;
- any calibration/learning/etc. preliminary measurements you made;
- data/graphs/etc. that demonstrate that you detected the effect you set out to observe.

Extensive literature on this topic is easily accessible on the web. One good example is:

https://arxiv.org/ftp/physics/papers/0204/0204033.pdf

A search for "1/f noise" on Google Scholar will yield millions of papers.

CAUTION: To see the effect you will need to collect data for a long time—probably around 24 hours—so you will have to build a stable setup; if you try to slap something together and hand-hold a critical component in place for a few minutes while your system collects data, you will be sorely disappointed.