

Encoders

An encoder is an electromechanical device that converts angular position or motion into an electrical signal

↳ can be linear or rotary

↳ potentiometer (contacts)
- simplest (rotary encoder)

↳ optical encoder
- Uses a photosensor and optical grating or color to do conversion

↳ hall effect encoder
- magnetized arrays of hall sensors

Optical Encoder

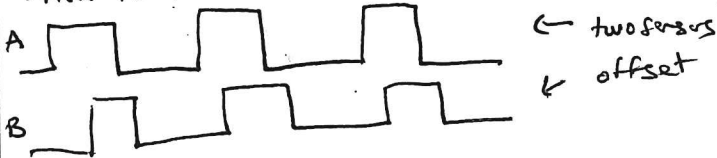
As color changes, output of photo sensor looks like this



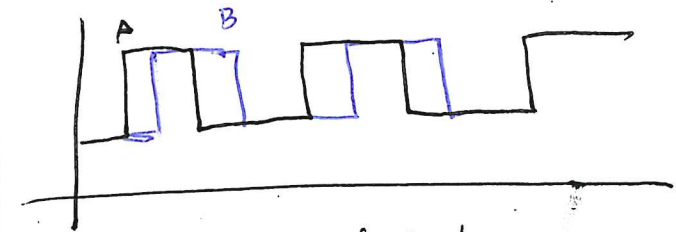
Requires careful calibration of photo sensor

↳ Use like a digital signal

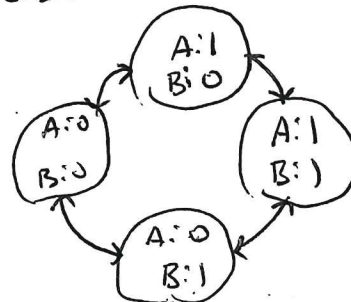
How to tell direction?



use this to increment/decrement a counter



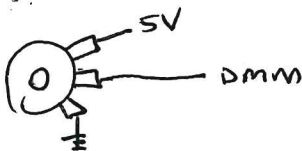
A closer to center of disk



↳ So, transition between these states tells me to increment or decrement the encoder

EX 1: potentiometer

↳ determine roughly how many volts per degree and test out

EX 2: Optical

↳ Arrange your photo sensor and adjust resistors so you can view the single square waveform as you spin the disk.

Lab is posted if you want to work on that (or other stuff)