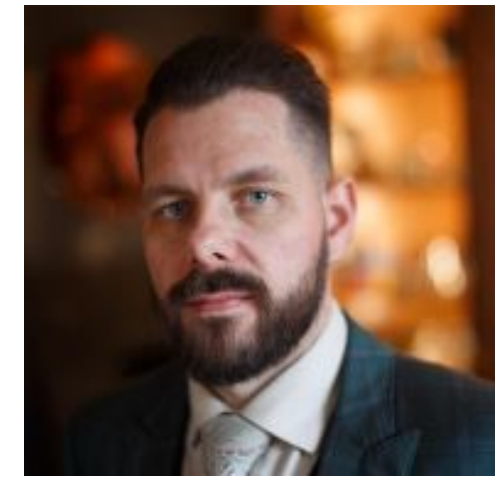


# WHEEL OF WHATEVER I WANT



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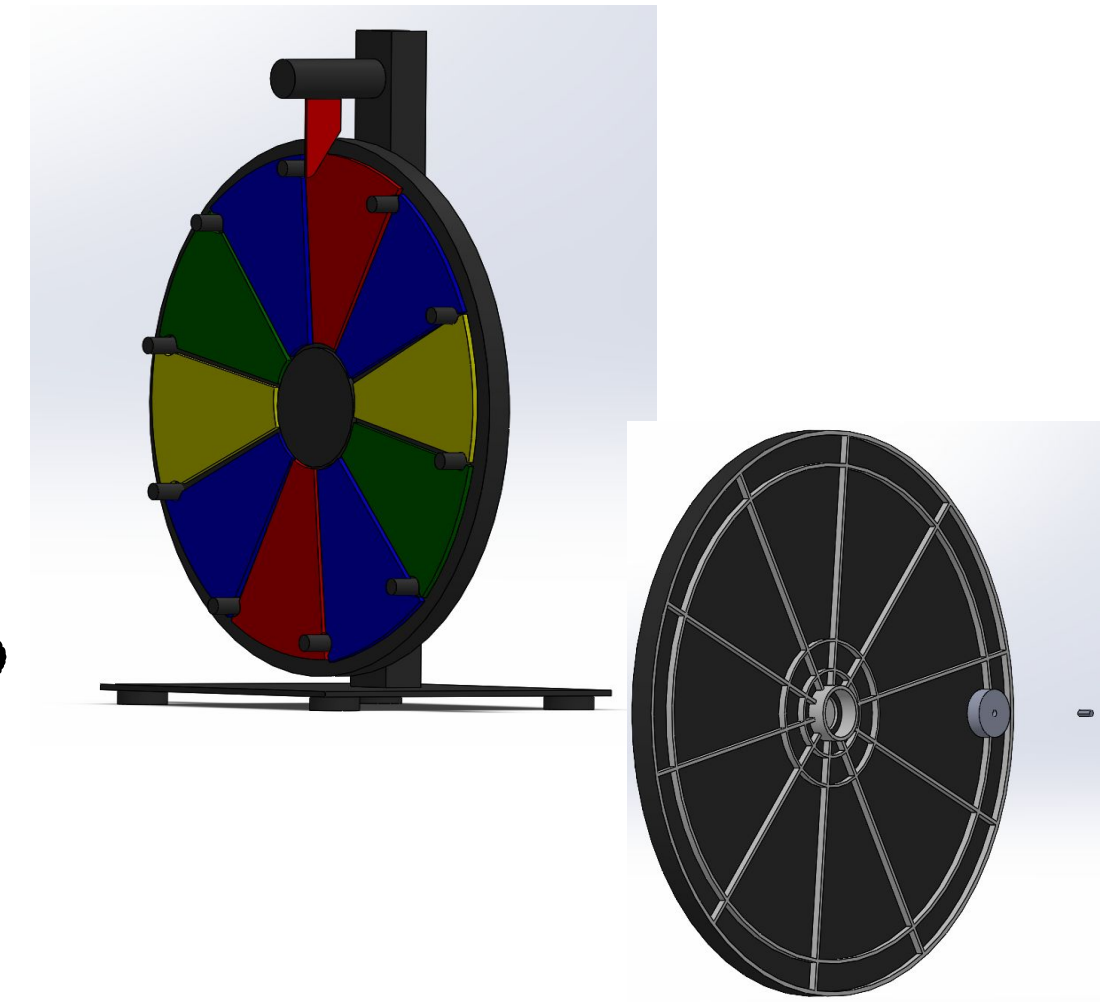
Sponser: Derek Irwin



The "Wheel of Whatever I Want" is a magician's spinning wheel that discreetly controls its stopping position, creating an illusion of randomness. It integrates motorized control for precise and natural stops. Our design optimizes efficiency and reliability through careful component selection, motor analysis, and careful design.

## Key Features

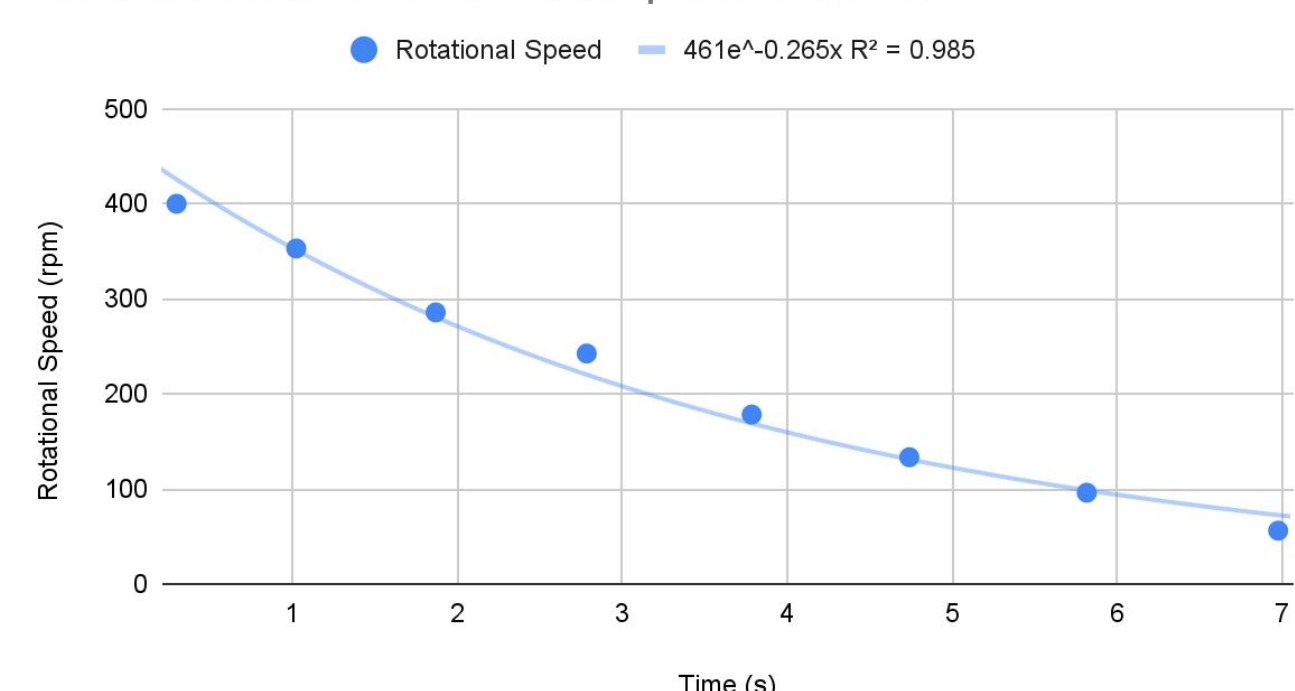
- **Concealed Motor Control:** A low-noise motor system ensures precise yet undetectable manipulation of the wheel.
- **Programmable Stop Mechanism:** Adjustable control settings allow flexibility in performance and adaptability to various magic routines.
- **Compact & Lightweight:** Designed to be seamlessly incorporated into a magician's toolkit without raising suspicion.
- **Battery-Powered Wireless Operation:** Enables full mobility without large power cables.



## Engineering Analysis

- **Motor Choice:** During experiments we could spin the wheel at a max of 436 rpm so our motor needs to be above that. Our wheel has 10 slices, so an encoder that can measure 48 counts per revolution will be more than enough

Natural Deceleration of Unmanipulated Wheel

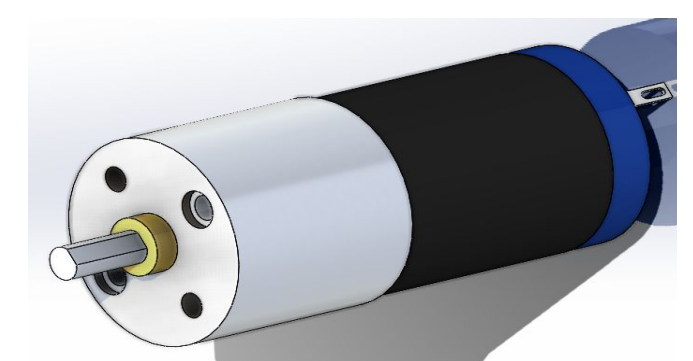


## Final Design

- **Current Design:** Our design includes a stand arm that can conceal the motor and a base that can conceal the encoder and arduino, with wires running through the stand
- **Coding:** Once the wheel is spun, the encoder will start tracking the position and the motor will kick in, reducing speed at a rate that mimics natural deceleration. Then, based on the remotely selected slice, once the wheel hits the correct position the motor will assist in slowing the wheel down, to match how it naturally slows down

## Future Improvements

- **Enhanced Wireless Control:** improved remote control (smaller, smaller distance)
- **Adaptive Control Algorithm:** Detects whether or not the wheel is spinning clockwise or counter clockwise, adjusting the way that the motor slows down and stops on a certain triangle.
- **Material Optimization:** Uses different materials that do not point towards custom machining/3D printing.
- **Concealment:** reduce size/width of stand and base



## References

- Pololu - 34:1 Metal Gearmotor 25Dx67L mm HP 12V with 48 CPR Encoder. (n.d.). <https://www.pololu.com/product/4844/resources>
- Pololu - MP 12V Motor with 48 CPR Encoder for 25D mm Metal Gearmotors (No Gearbox). (n.d.). <https://www.pololu.com/product/4860>

