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Solidworks Modelling of an Electric Scooter

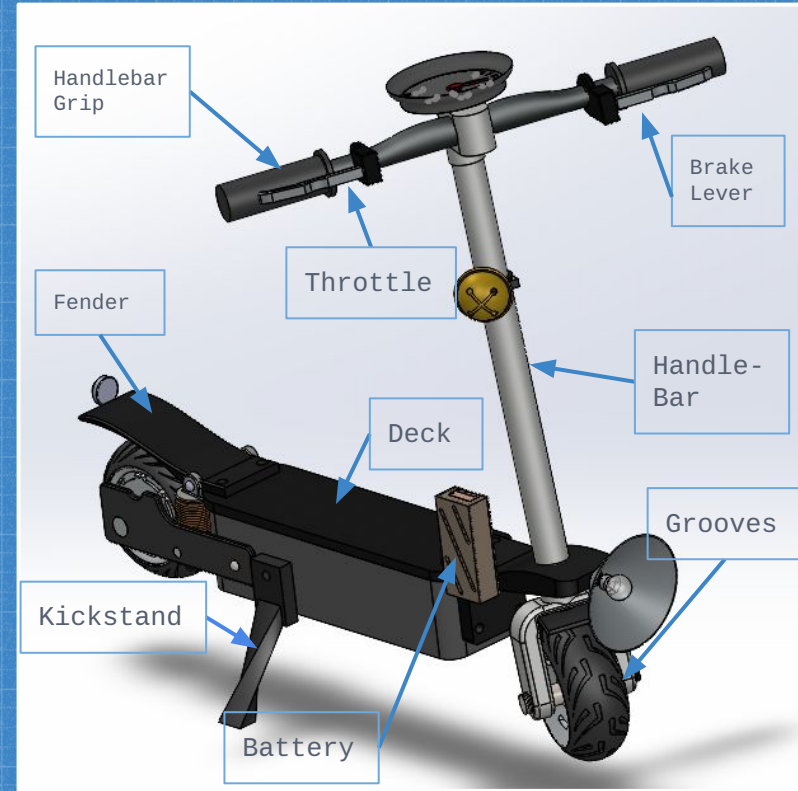
Background

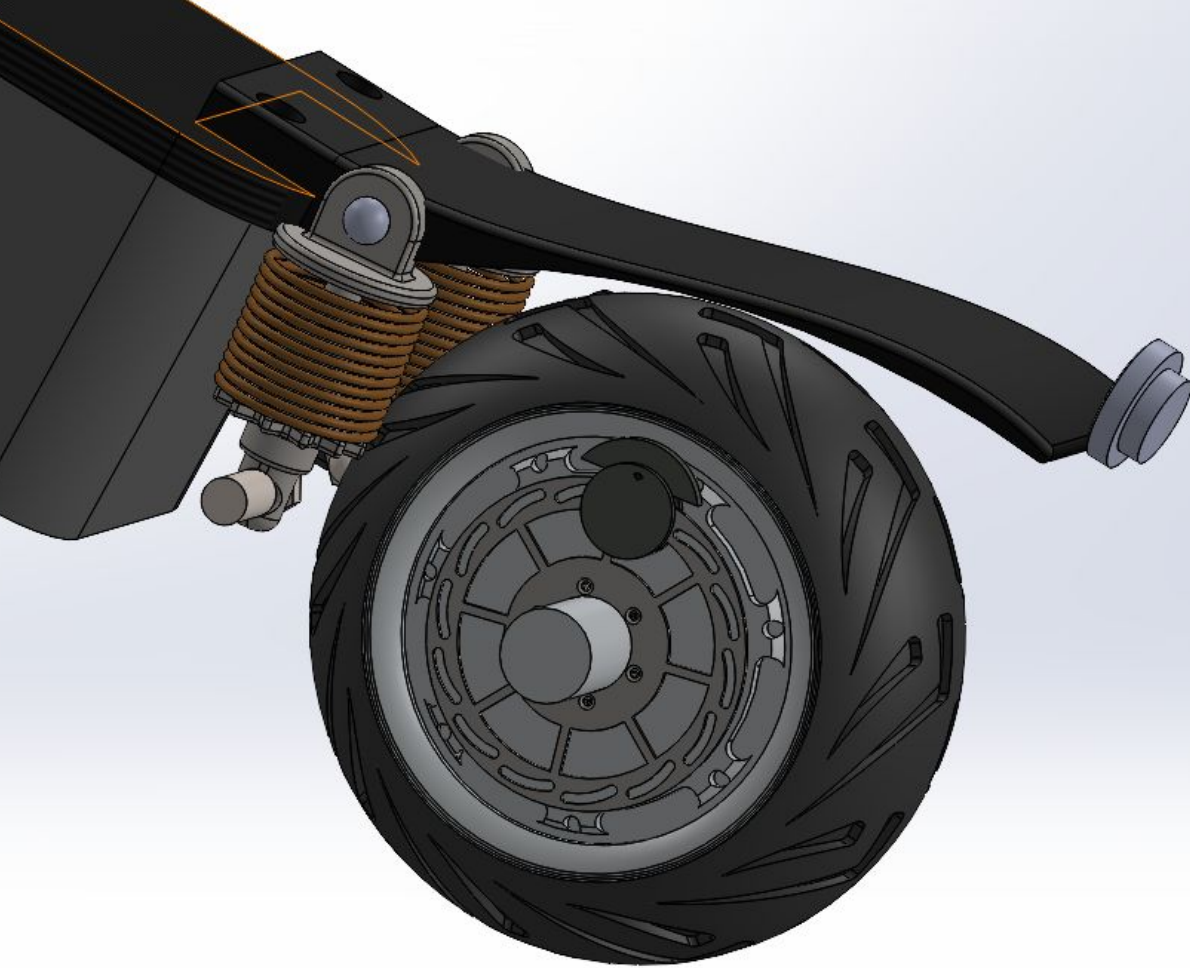


- Staple of Rutgers
 - Introduced in Sept. of 2020
- The first Electric scooter was made in 1915
 - The Autoped, could reach 20 mph but extremely unstable
 - Now evolved to cruise at 18mph with no issue

How It Works

- Battery powers the motors
 - Pushes scooter forwards
- Brakes slow and stop the wheels
- Handlebars allow you to turn
 - Changes orientation of tire
 - Allowing for turning and control by user
- Grooves on the tires provides adequate traction
 - Even in rainy conditions, the tires will keep contact with the ground (no hydroplaning)
- Kickstand holds the scooter upright
 - Flips down from the scooter and makes contact with the ground



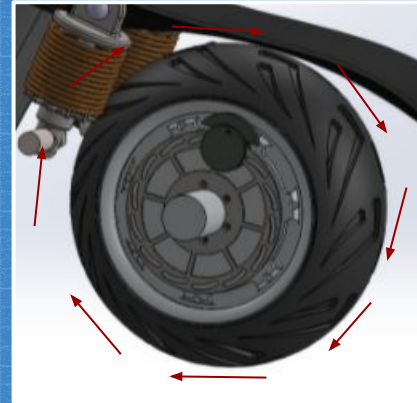


Main Parts

- Disk Brake
- Handlebars
- Rear Tire Assembly
- Battery and Storage
- Front Wheel and Fork

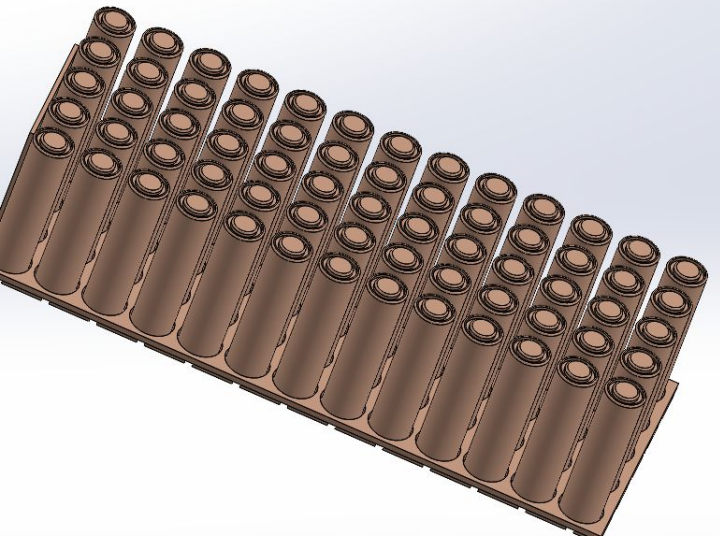
Main Mechanisms

- Wheels-rotate around their respective axes
- Handlebar- able to rotate with a fixed cylinder (enable rider to steer)
- Adjustable Height- one cylinder fits inside the other cylinder
- Access to battery- side panel slides open and closed
- Kickstand- Swivels from parallel to perpendicular to the deck



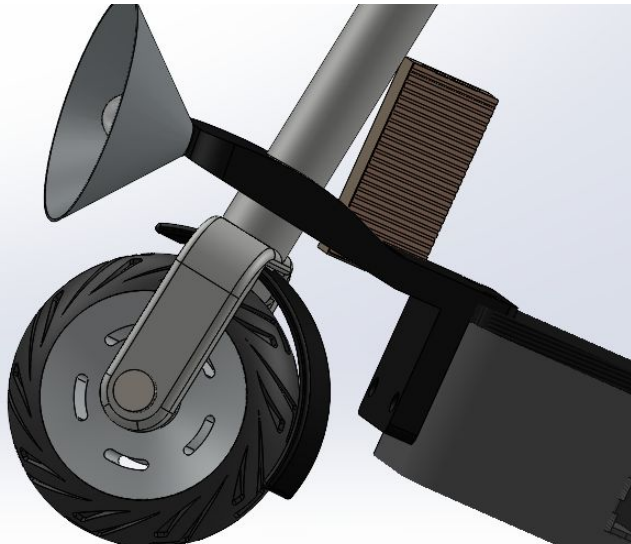
Animation





Design Challenges

- Wheel and disk brakes
 - Size and cuts
- Fender
 - Shape
- Battery
 - Fillet
- Deck
 - Length and height to fit batteries



References

<https://www.smithsonianmag.com/history/motorized-scooter-boom-hit-century-dockless-scooters-180971989/>

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