

The SMARTE Bike

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Motivation

The current market for electric bicycles tends not to deviate much from their main functions. The SMARTE bike is a newly proposed electric bicycle with additional quality of life functions that make using the bike instead of more environmentally polluting alternatives more attractive. The SMARTE bike also incorporates technologies that have yet to gain widespread use in commercial products.

Background

Even though the number of blockchain wallets has been growing in tens of millions each year, we haven't yet seen many products that incorporate the technology into hardware. The SMARTE bike uses this technology in order to verify the person using the bike should have access

With many new electric cars implementing generators to recharge their batteries, we thought it would be a great addition to the bike.

Tech used

Hardware
Raspberry pi, two electric motors, Speed Controller, battery, rectifier, and throttle quadrant.

Software
Ethers.js
Web3.js
Hardhat development environment
Goerli Ethereum testnet

Results

The SMARTE Bike

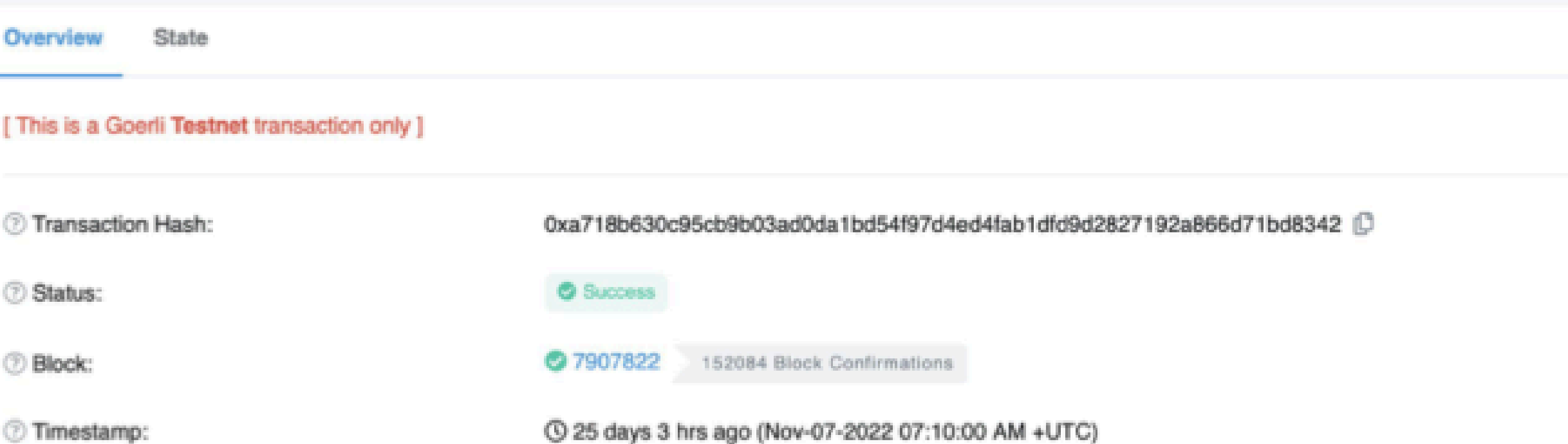
Coordinates

SMARTE Bike key status: 0

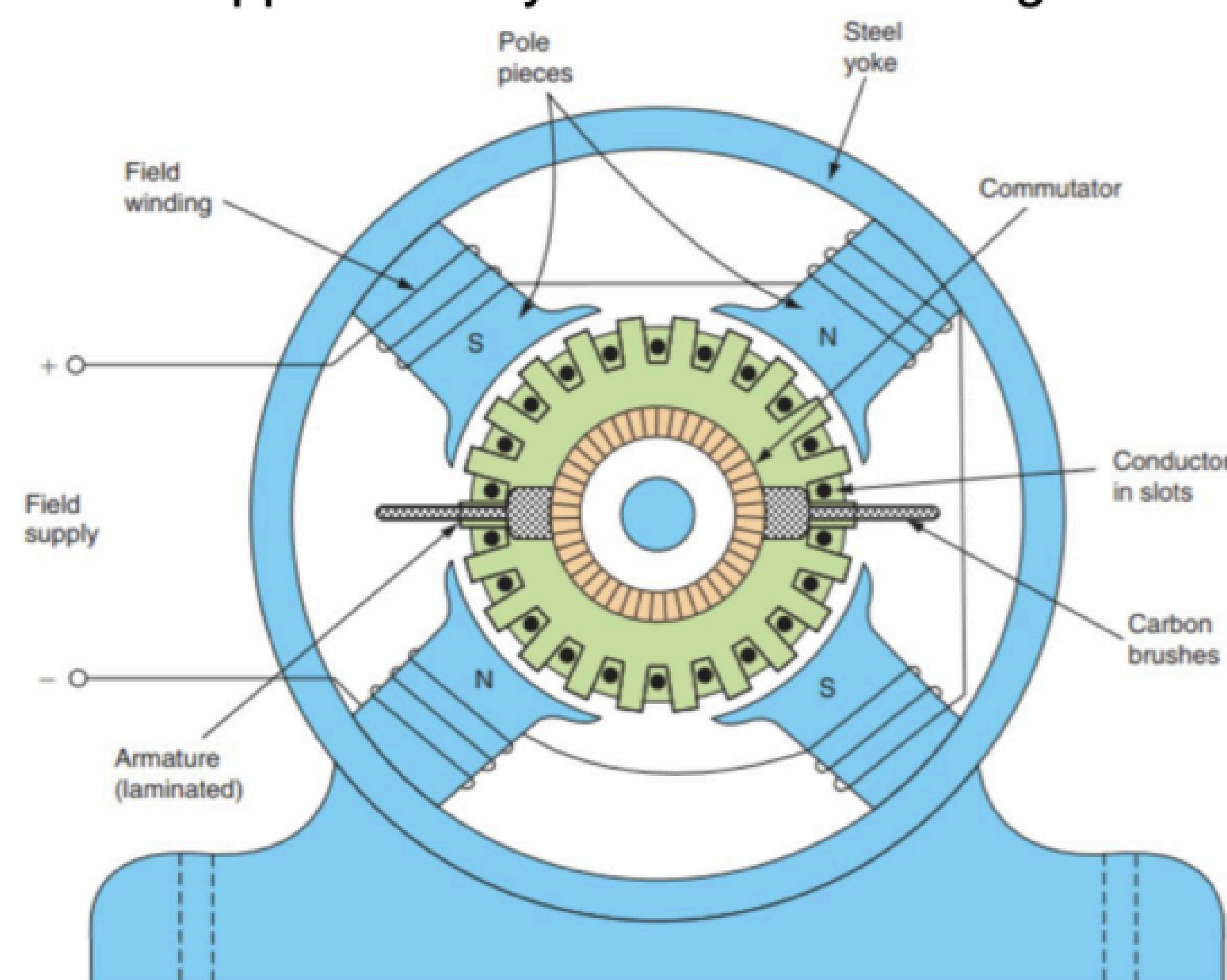
No key associated with this ethereum address

Buy a bike key here!

Smart contract being deployed to Goerli Testnet



The bike has a DC motor generator on the front which charges the battery as the bike is moving forward. In order to not overload the battery there is a series of voltage regulators and limiters to ensure safety of the battery and rider. With approximately 20-25 miles of range.



@ 8.5 mph (110Rpm)
Voltage ~ 15V
Current ~ 3 A
Power ~ 45W

@ 20 Mph (260 Rpm lim. of bike motor)
Voltage ~ 32V
Current ~ 4.5 A
Power ~ 145W

The SMARTE Bike

Coordinates

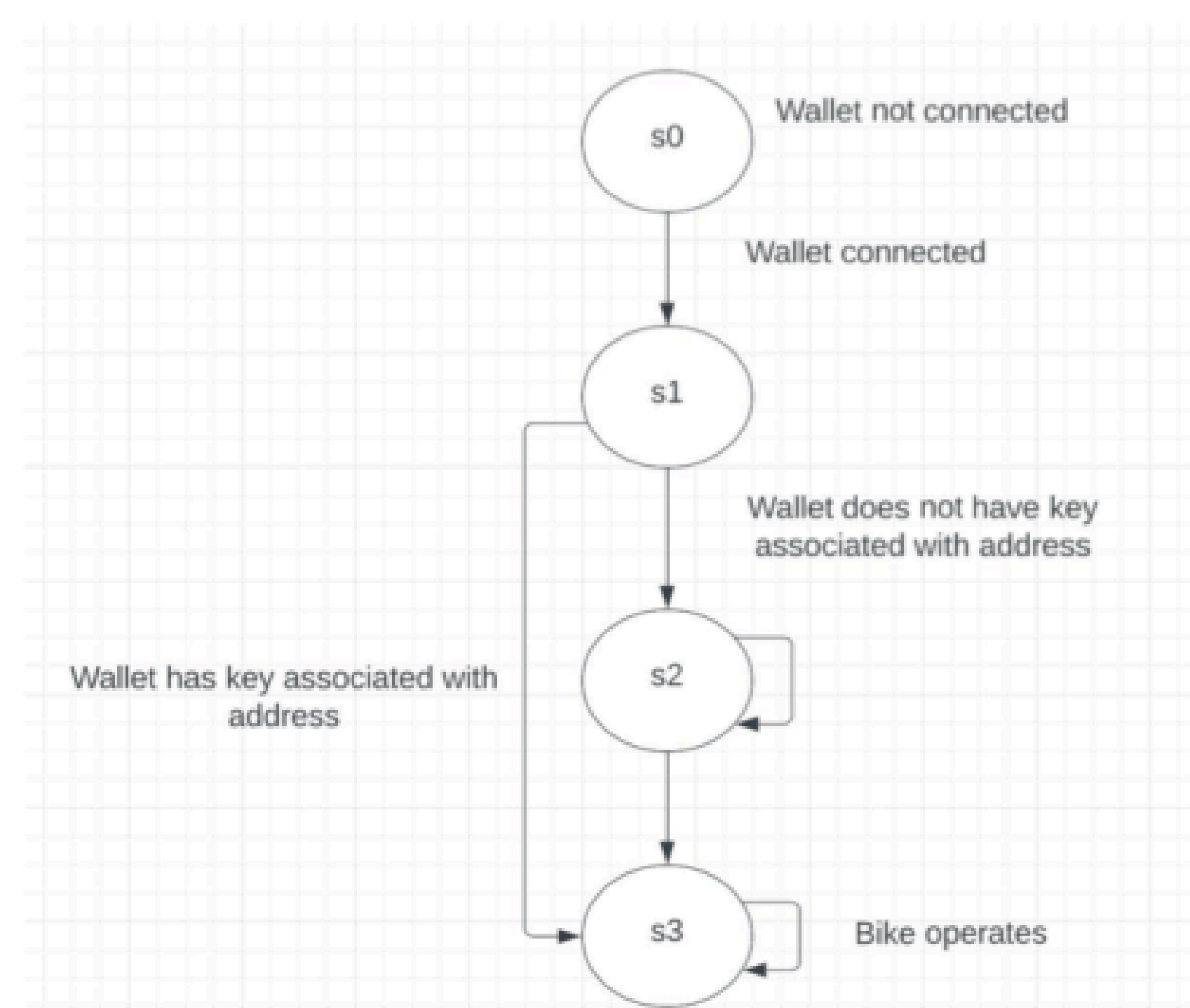
Latitude: 36.10
Longitude: -115.14
Speed: 0.01 mph
Altitude: 622.85

SMARTE Bike key status: 1

Have fun riding!

Buy a bike key here!

States of web application



Future iterations

For future iterations of the SMARTE bike, we'd like to enable a more robust navigation unit..

In addition to this we've explored the idea of rewarding users of The SMARTE bike with an ERC-20 cryptocurrency based on the distance, duration, and frequency of their rides.

Using NFTs as verification of bike keys could also allow The SMARTE bike to be transferred between users instead of having to buy new keys.

Adding a multimeter to the battery would also allow us to be able to monitor voltage load, power loss etc.

Contact

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