A Raspberry Pi Mesh Network to Monitor Biodiversity

Timothy Park, Jacob Scriffiny, Noah Smith, and LTC Thomas Babbitt

Unites States Military Academy, Department of Electrical Engineering and Computer Science

Introduction

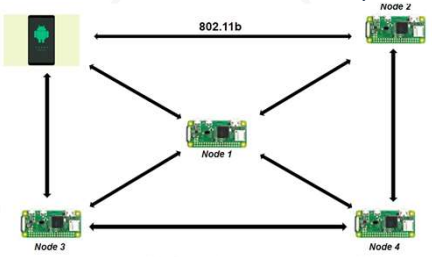
- Military bases contain significant biodiversity including many endangered species.
- Military Leader and Researchers need a low cost, expandable, and discreet means to monitor wildlife.
- Allows for little to no human interaction - 24/7

St. Francis Satyr butterfly

Hunt stand silent cam $184

Network Design

- Mesh network allows for flexible implementation and durability
- Transmits approximately 110 ft.
- Built with built in Ad-Hoc network functionality on Raspbian



Android App Interface

- Allows seamless export of audio/visual data from all connected nodes with low latency
- Connects and communicates with each individual node, allowing for live feed streaming

Sensor Node Design

- Uses Raspberry Pi Zero as the base
- Has a camera and microphone to capture video and audio and infrared motion sensor
- Data stored on the node itself, allowing for increased storage options

Conclusion

- Possibility for additional features such as target identification or additional hardware to increase performance
- The system created is lightweight (14.4g) and inexpensive ($92)
- Design is simple without unnecessary parts or movement
- The ad hoc network allows for an inexpensive and dynamic method to monitor wildlife on military bases.

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