Modular Electronic Devices: Geotagged Directional Photography

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Goals of the Project:
- To design an Open Source Modular Camera System using Bug Labs’ BUG
- To use the Camera System for Geotagged Directional Photography

Compass Module:
- This module records the compass direction and sends it to the BUGbase (Figure A) via the BUGvonHippel Module (Figure C)
- It consists of a Hitachi HM55B 2-axis compass Integrated Circuit (IC) (Figure F), a 7404 TTL NOT gate (Figure G), and two resistors
- The 7404 TTL NOT gate and the resistors make it possible for the BUGvonHippel and the HM55B to communicate by regulating the voltage passing between the two devices

GPS Testing:
- The readings from the GPS module was compared to a USGS benchmark located in front of Heterick Memorial Library
- The results from this test are shown in the graph below
- The orange point at the origin designates the benchmark coordinates and the blue points represent the readings obtained with the BUGlocate module

Conclusion:
- The final camera system takes up to 500 pictures
- Each picture is embedded with the GPS location at which it was taken and the compass direction the camera was facing
- The pictures can be uploaded to a computer to view the GPS and compass information
- The pictures can be reviewed on – and deleted from – the camera system

Future Plans:
- To improve upon the design, a 3-axis compass IC could be utilized
- Also, the embedded compass direction could be integrated into image viewing software such as Google Earth