Sibling Safe With LIDAR

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The purpose of my experiment was to program and build new scanning technology to determine if different things move in a room while someone is away. I cloned the repository on GitHub (a cloud hosting platform for code) to get code and a schematic to build my LIDAR machine. I built my device using an Arduino Mega, a breadboard, two servos, a logic level converter, and a pan and tilt mount. I tested my device and Java code to create .xyz scan files but the files were hard to distinguish with the human eye. So, I uploaded the .xyz files into the CloudCompare app to help compare and analyze the 3-D images. Results from my control tests (a room where nothing was moved) were similar and showed more blue. To test my hypothesis, I also used a multitude of variants between the controls and independent variables (I changed the environment by moving the vacuum more to the right two times between the scans). In conclusion, I found that the multiple green scanned points instead of blue on the histogram demonstrated that the images were less alike. My hypothesis was correct; my images in the CloudCompare produced from my device showed more green because an object in the room had actually moved. My project proved that I could defect differences of items moved with LIDAR.

Awards Won:

Patent and Trademark Office Society: Second Award of $500