Project Specific Success Criteria Check-Off Form

Project Name: Metaporter Team Number: 05

Project Description:

Metaporter is a handheld, plugged-in 3D scanning and reconstruction tool. With Metaporter, users can scan still objects and get a dense 3D mesh for it within minutes. Metaporter creates accurate 3D models by fusing multi-modal sensor data from a Camera and an IMU and estimating the volumetric radiance-and-density fields using neural networks. However, it has some limitations, and the quality of the reconstruction depends on the quality of data collection including the amount of data acquired. Metaporter may also have a limited ability to reconstruct certain types of surfaces and may not work under certain lighting conditions. Users will use a keypad matrix to select modes and interface with the device. A display on the device will show useful information such as the system state and the data recording time. The reconstruction will be viewed on the host machine. Our stretch goal is to create our own implementation of SLAM, if time allows.

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|  | **PSSC** |  | **Date Verified** | **Initials** | **Notes** |
| **1** | An ability to receive user input by interpreting data from a keypad matrix.  (Hardware) | P |  |  |  |
| F |  |  |  |
| **2** | An ability to display status on the LCD display from the microcontroller via SPI.  (Hardware) | P |  |  |  |
| F |  |  |  |
| **3** | An ability to receive data from the IMU (breakout board) using the microcontroller via I2C.  (Software) | P |  |  |  |
| F |  |  |  |
| **4** | An ability to send and receive sensor (IMU) data from the microcontroller to the compute unit via UART.  (Hardware) | P |  |  |  |
| F |  |  |  |
| **5** | An ability to use direct memory access to periodically transfer data from memory to UART.  (Software) | P |  |  |  |
| F |  |  |  |