ISR Proposal

Friday, February 5, 2021 5:39 PM

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Robot Fish ISR Propo...

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Plan of Study

I plan to spend the semester researching and developing a system for using structured light for navigation in autonomous underwater vehicles. This research will take place in three stages:

Stage I: Background Research (Feb 1 - Feb 14)
I'll spend these weeks researching prior art in the structured light space, along with learning any relevant mathematical concepts or programming libraries. I'll focus primarily on scholarly articles and any available code samples (in particular, I'll try to find any code I can get working myself).

OLOs

Become Self-Directed Learners, Acquire Knowledge, Skills, and Approaches, Plan and Execute

ASSESSMENT PLAN

This stage will be assessed via a conversation with Dave during the week of Feb 15th.

Stage II: Benchtop Test (Feb 15 - Mar 28)
This time will be focused on developing a system which uses structured light to accurately measure two dimensions of an object in a benchtop setting. The emphasis will be on getting something working as quickly as possible, then iteratively refining it into a more polished product. I'll draw on the information gleaned in Stage 1, along with any code samples that I found. As this stage progresses, I'll collect data about the accuracy of each iteration of the system.

OLOs

Become Self-Directed Learners, Acquire Knowledge, Skills, and Approaches, Apply Analytical Methods, Plan and Execute

ASSESSMENT PLAN

This stage will be assessed in a conversation with Dave during the week of Mar 29th.

Stage III: In-Motion Test (Mar 29 - May 5)
The final stage of this research will be to modify the system developed in Stage 2 such that it's capable of accurately scanning objects while in motion, and using the additional collected data to build a three-dimensional model of the scanned surface. Depending on the progress made in Stages II and III, along with the progress of other RoboLab researchers, this may also involve running the system underwater using a Robot Fish test bed.

OLOs

Become Self-Directed Learners, Acquire Knowledge, Skills, and Approaches, Apply Analytical Methods, Plan and Execute, Collaborate Successfully

ASSESSMENT PLAN

This stage will be assessed in a conversation with Dave during the finals period.