Project Journal

Machine Vision-Based Underwater Anti-Backscatter Lighting System.

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# W/B: 30-10-2023

## Initial Supervision Meeting & High-Level Objectives

* Meeting with Paul Mitchell and Benjamin Henson on Tuesday.
* Discussed background for original project idea and overall goals to achieve.
* Discussed previous work carried out by Katie, limitations, and scope for future work.
  + Improving real-time computing.
    - Experimentation with more powerful processing hardware.
    - Research on hypervisors, threading, and multiprocessing.
    - Using IR beams to detect backscatter, potentially eliminating need for high/low beam flash loops.
    - Streaming video from Pi to a more powerful computer to compute backscatter locations, transmitting back to Pi to drive projector.
      * Potential latency issues.
    - Algorithm, Python/OpenCV optimisations.
  + Underwater testing.
    - Takes a long time, can be achieved with bubbles to replicate backscatter in controlled environment such as a tank.
    - *Probably best to carry out at the end of the project?*
  + Backscatter depth perception.
  + ML-based backscatter position tracking.
* Pursuing one point from the above four is complex enough for the project.
* Next meeting scheduled for 2pm on Thursday 9th.
  + In-person at the ISA.
  + Paul to send calendar invite.
  + Tour of the ISA, and desk allocation for me to work at.
* Actionable points:
  + For each of the four future work objectives, I’ll be carrying out preliminary research to understand what technologies, technicalities and techniques are required.
  + At the next supervision meeting at the ISA, I will be introduced to the end-result of Katie’s work. Using this I can better gauge what point to pursue.