Date: March 2022 / Version: 1

School of Engineering	Method Statement

Title
Computational and experimental work on Individual Project

Location of Activity	**Date**
B185 Labs 1 and 3	23/10/2023
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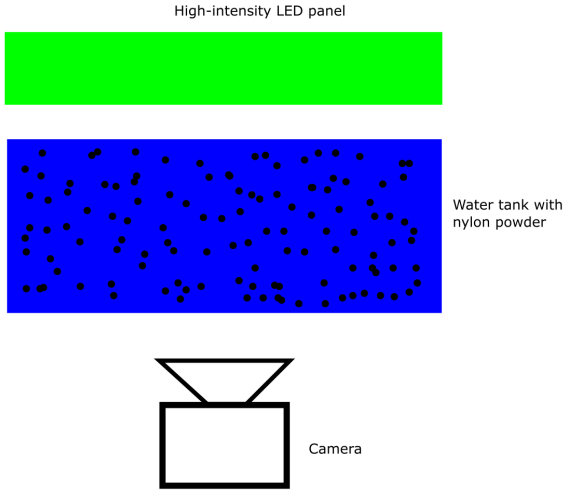
Introduction / Overview.
This project aims to characterise the colour spill for a specific optical system. This will be achieved primarily through writing code to simulate it, but there will also be experimental testing of the code with data that I gather from Lab 1 or 3. During testing, an array of cameras and LED panels will be set up, and air will be blown through containing tracer particles.

Description of Task and how it will be carried out.
The first task is to figure out the transfer function that governs the colour spill. This will be done by adding features to simulate colour spill into the Gigatrack codebase during synthetic image generation, and then writing code to correct for this effect. During this phase, some quantities like the number of ghost particles this adds can be estimated.
The second phase will be more centred around experimental work, and this is the phase that I will need access to the labs. In this phase, a MP-PTV setup will be used to generate experimental data, and the portion of Gigatrack that tracks particles will be used. This setup includes having nylon powder in flowing water to generate shadows for a nearby camera to pick up, as shown below.



The camera will be near the water, as will the high-intensity LED panels.

Control Measures including training, PPE
Most important is an induction into the lab. This included who to contact in case of emergency and relevant information regarding safety in the lab. In addition to this, there will never be a single person working in the lab. The cameras will be controlled by Raspberry Pi computers. To minimise the risk of fire, the power supplies will be PAT tested. Because of the nature of the work, electronics have to be close to the water tank. Where this does not affect optical quality, shields will be made to minimise the chance of water hitting electronic components. This is especially important for the LED panels, as these are higher power than the Raspberry Pis. In addition to

this, there will be a label on the water tank saying not to hit, to minimise the risk of water splashing out and hitting the electronics. This is also important because spilled water can increase the risk of slips, trips and falls. To minimise this risk, any spills will be cleaned up promptly. Nylon powder can irritate the skin, eyes and lungs, but it doesn't pose any major health hazards. To minimise the risk of harm, the materials safety data sheet will be on hand so that prescribed procedures can be followed.

Emergency Arrangements

If an emergency occurs such as a fire or life-threatening injury or event, the labs have a landline that
can be used to reach for help using the emergency service number 3311/023 8059 3311.
In case of a fire, each lab has signs leading to the nearest exit leading to the evacuation point in the
centre of the Boldrewood campus. The building has a fire alarm system which is tested weekly.
There is first aid information for the trained staff first aiders in the lab and if emergency services are
needed then call 999.

Additional persons involved in activity

N/A