



Science Summer School
Mid & East Antrim Council

Object Recognition

OBJECTIVE

The purpose of this demonstration is to show how lasers and optical phenomena are used to identify objects, which is the basis for facial recognition.

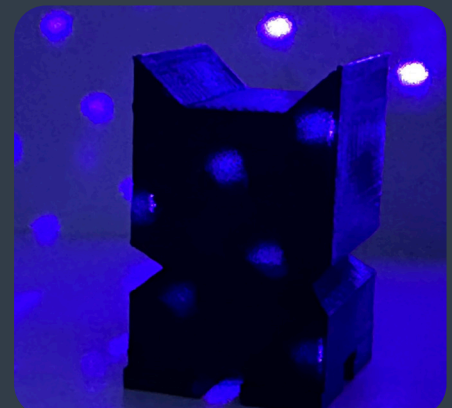
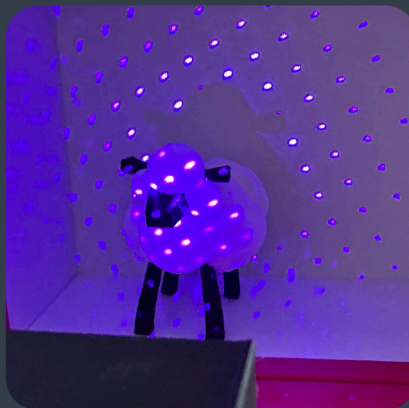
HOW IT WORKS

This technology is enabled by advancements in laser technology and by exploiting the behaviour of light. It is now possible to make very small lasers (smaller than a grain of salt), which can be built in to phones. By combining an array of these tiny devices, with lenses and gratings which split the laser beams, we can create ordered patterns. When these are projected on to an object, it distorts that ordered pattern, allowing us to measure those distortions. We can then compare that data to stored data, allowing us to determine whether the object matches or not.

ABOUT THE CHALLENGE

Figure out which is the "Yelo" animal.
Project the dot pattern on to the animal.
Take an image.

Use the software to measure the distances between these dots.
Compare those to the measurements given and from this determine which one matches.



QUESTIONS

- What happens to dots when they project on to features that stick out from the object?
- What happens to the dots when they project on to features that go in to the object?
- What happens to the dots when they hit an edge?
- What about an angled surface?