Project Title: A Visual Sensing Platform for Environmental Monitoring

Project Researcher: Tony Blake

Funding Body: Beaufort Marine Awards Internship Programme

Project Summary: Work by Edel O'Connor (Beaufort Project) and Ciarán Ó Conaire (CLARITY) on visual sensing for marine and river locations has highlighted the lack of integrated platforms for wireless low-power internet-enabled visual sensing. However, the work has demonstrated the usefulness of coupling visual sensing with in-situ water quality sensing. Independently, Kim Lau (CLARITY/NCSR) is working on a new water quality sensing platform that measures turbidity, colour change, etc and the plan is to ultimately integrate a camera into this platform. The objective of this internship is to pull both strands of work together by developing a common platform.

We believe that visual sensing and in-situ sensing can be loosely integrated, with data captured separately for each modality and aggregated and processed remotely, but this model requires bi-directional internet connectivity for both visual and in-situ sensing. We believe that we can prototype this platform using COTS components, and this is the end goal of this hands on hardware-centric internship project. This project is very aligned with existing remote sensing research within the Beaufort project. Whilst we've had some success in linking visual with in-situ sensing via the River Lee deployment in Tyndall, this approach is not scalable. The next phase of this work requires a dedicated platform that we can ultimately produce in small volumes for real deployments. This would allow us, for example, to deploy at multiple points along a river to obtain early warning of a pollution or flooding event, as well as monitoring it as it progresses along the waterway.

Demonstrable outcomes: A camera-enabled water quality sensing platform, think ``Dermie's lunch box'' with a camera, that is designed to enable low-volume production (approx 5) in the future for real deployments.