

Student Internship Opportunities

There is an opportunity to work with/learn from an experienced team of science and engineering professionals on a diverse range of commercial green-fields R&D projects.

Data Effects

Data Effects is a South Australian technology company that is committed to providing positive social, economic and environmental outcomes for Australian communities. We work closely with government and private industry on a diverse range of technology-focussed agricultural, environmental and peri-urban research and development projects. Data Effects specialises in project management, complex field data acquisition, development and deployment of real-time (IoT) sensing platforms, cloud data management, bespoke data communication/visualisation, machine learning, machine-to-machine communication and automated systems.

Data Effects provides a friendly, welcoming and dynamic environment to undertake your student internship. We are conveniently located in the heart of Adelaide on level 2, 51-53 Rundle Mall (opposite H&M).

Project: Biosecurity - Pest Snail Surveillance Sentinels

We are looking for talented and enthusiastic postgraduate students from the following disciplines:

Electronic Engineering - Contribute to design and construction of field-deployable, fully automated snail movement and environmental monitoring surveillance systems. Opportunities include:

- PCB design and layout.
- Design and implementation of a bespoke solar energy management system.
- Adaptation and integration of existing satellite backhaul solutions.
- Design, adaptation and integration of new and existing camera solutions (UV, visible, Infrared and thermal).
- Collaboration with software developers to facilitate appropriate embedded software solutions.

Software Engineering - Contribute to the design and deployment of a cloud-hosted data management solution and a public-facing data visualisation dashboard and snail movement alert system. Opportunities include:

- Working with industry professionals on a green-fields project.
- Modern tech stack and tools including C#.Net, Python, VueJS, PostgreSQL OpenAPI 3.
- Development of server-side algorithms for image / data management with Web-based visualisation.
- Exposure to cloud environments such as AWS, Azure and/or GCP.
- Embedded / firmware development working with electronic engineers on bespoke hardware components.

Commercial and Industrial Design - Contribute to the industrial design of field-deployable, fully automated snail movement and environmental monitoring surveillance systems. Opportunities include:

- Product prototyping (3D printing and CAD).
- Design practical technology hardware solutions for field deployment in remote locations (style, function, quality and safety).
- Work in collaboration with fabrication and design partners (e.g. [Rowland Metalworks](#)) to facilitate the manufacturer of commercial products.

Project Summary

Task 1 - Develop (x3) field-deployable snail movement time-lapse cameras. Camera units will be powered using solar panels and batteries. Time-lapse images (every 30 seconds) will be stored locally on secure digital (SD) cards. Data will be retrieved from SD cards during regular physical site visits by project partners (Not Data Effects). These data will be manually transferred to The Australian Institute for Machine Learning (AIML) for analysis. Camera units will be deployed on the Yorke Peninsula.

Task 2 - Develop, deploy and maintain a cloud-hosted data management solution and associated application programming interfaces (API). These will be used to manage, share and store all data associated with Data Effect's components of the project (including associated alerts/alarms).

Task 3 - Develop (x3) field-deployable, fully automated snail movement and environmental monitoring surveillance sentinels (S3). The S3 system will be powered using solar panels and batteries. Using the learnings from task 1, time-lapse images (every 30 seconds) will be captured and transferred from the field to a cloud data repository using satellite backhaul (enabling deployment anywhere in the world). The S3 system will also comprise a range of near real-time environmental sensors that will monitor specific micro-climatic parameters in the immediate vicinity of the deployment. These will include soil moisture (top 10 cm), leaf wetness, temperature, humidity, rainfall and barometric pressure. Environmental data will be regularly (frequency to be determined) transferred from the field to a cloud data repository using satellite backhaul (enabling deployment anywhere in the world). Timelapse image data will be automatically transferred to AIML using an appropriate API developed by Data Effects. Environmental data will be stored in a cloud-hosted database and visualisation outputs will be displayed in near-real-time (to be determined) on a web portal/interface (Developed by Data Effects). Systems will be deployed on the Yorke Peninsula.

Task 4 - Provide satellite-connected in-crop environmental monitoring networks that will be used in association with the S3 systems to establish regional baselines for optimal snail movement conditions. Individual sensor nodes will monitor in-crop temperature, humidity and near-surface (top 10 cm) soil moisture. Environmental data and/or condition-based alerts will be transferred from the sensor nodes to a cloud data repository via direct node to satellite links (enabling deployment anywhere in the world).

Task 5 - Develop a public-facing data visualisation dashboard and snail movement alert system (likely to be via text messages) to inform land managers about snail behaviour/movement in their region.