2025-26 HIVE Summer Internship Project

A Day in Motion

Primary Academic Supervisor
A/Prof. Joanne McVeigh

Project Background
Accelerometer data provides rich, minute-by-minute information about human activity, yet it is often presented in static charts or summary statistics that can be difficult to interpret. By creating an interactive visualisation and timeline that map how individuals transition between behaviour categories throughout the day, we can bring the data to life, highlight group differences (e.g., age, gender, weekday vs. weekend), and showcase The Hive's capability to visualise complex temporal data at scale. We hope the output can be translated for health promotion, clinical contexts, and sport/athlete monitoring.

Project Description, Expected Outputs, Possible Stretch Goals
The aim of the internship is to design and implement an interactive visualisation that represents how people move through the different domains of sleep, sedentary behaviour, light activity, and moderate-to-vigorous physical activity (MVPA) across a 24-hour period. The project aims to provide a compelling way of "seeing" human behaviour rhythms, enabling researchers, industry partners, and the public to better understand population activity patterns.

Links to background reading and any relevant recent work in the field
Physical activity and the Raine Study https://doi.org/10.1186/s12966-016-0363-0

SENS motion and Motus https://doi.org/10.2196/48209

Thigh worn accelerometer https://doi.org/10.1186/s12966-024-01627-1

What type of visualisation will the student develop or produce?
Tiled wall: Animated “clock” or time-slider display where dots or avatars represent participants, shifting behaviour categories minute by minute. Allows the audience to see synchronisation and divergence in daily activity rhythms across a group.

Option of developing a Power BI dashboard for interactive visualisation

How will the visualisation contribute to your research outcomes?
The visualisation will allow interactive interpretation and presentation of people’s activity data across the 24-hour period, showcasing physical activity level, intensity, and pattern. Interactive visualisation will allow researchers showcase accelerometer-measured data to participants, industry partners and policy makers. Future work of the visualisation could be used in physical activity behaviour change and health promotion.

If the project is successful, where would you consider publishing the results?
We will share the results at school-based research seminars. If applicable, we can consider providing the dashboard as an open source for other researchers to use and test. We will also consider writing the development and testing of the visualisation for academic journal publication.

Draft Project Timeline:

Week 1

Nov 10 - Full day HIVE induction
Nov 11 - Area and Project Induction with Primary supervisor
Develop project plan with HIVE and academic team
Literature and relevant project review

Familiarisation with literature review around activity data visualization and understand limitations of current data visualisation. Define datasets and visualisation tools

Week 2

Define design concept.

Week 3

Build initial prototype (small dataset). Focus on core animation of activity transitions.

Week 4

Test prototype with another dataset. Expand functionality (comparisons, clock view). Test on Hive display.

Week 5

User testing and refinement. Collect supervisor and peer feedback

Week 6

Refine visualisation

Week 7

Test refined visualisation with multiple datasets

Week 8

Finalise visulisation

Week 9

Focus on report writing and presentation preparation

report writing and prepare for presentation

Week 10

Focus on report writing and presentation preparation
30th Jan Final Presentation Showcase Day and final report due

Finalise report writing and presentation

Student Experience and Supervision:

How often will you meet with the student over the 10-week period?

Twice per week for the first 2-3 weeks, and once a week from week 4 onwards. Communication via Teams where required

Your work desk location and the location of student desk

Building 401

Student Attributes:

Please indicate any preference for student's academic discipline or field of study

Data science
Computer science

What competencies are required to start this project

Beginner - 2D image and/or video software (e.g. Adobe Suite, Sony Vegas)
Beginner - 3D modelling software (e.g. Blender, 3ds Max)
Beginner - Unity 2D/3D Artistry (assets, lighting, cameras, materials implementation)
Intermediate - Unity Programming (C# coding, animation syntax, debugging, problem-solving)
Intermediate - Data structures, analytics, statistical modelling
Intermediate - R

Do you have any other student attributes you think are important to the project?

Comfortable with R/R Studio, Python, analyse data in CSV file format independently, team work, problem solving skills