Reducing mental health impacts of social media through modelling and application design.

Why?

“Seeing friends constantly on holiday or enjoying nights out can make young people feel like they are missing out…
These feelings can promote a ‘compare and despair’ attitude.”

– United Kingdom Royal Society for Public Health

“People who engage in a lot of social media use may feel they are not living up to the idealised portraits of life that other people tend to present in their profiles. This phenomenon has sometimes been called ‘Facebook Depression’”

- Dr Primark, University of Pittsburgh

Heavy social media users

2.7x

More likely to be depressed

Why not?

Existing Research

- Can show the correlation between heavy social media usage, but not prove the link.
- Nothing to say that the issues people are seeing aren't already there, prior to social media. I.e. one in four students suffer from mental health issues already, of which 77% identified their issues as depression.
- Could be argued that heavy social media use is a symptom of depression, rather than a cause.

Challenging Technology

- Machine learning is slowly maturing, but as found in existing research, creating a functional model to monitor emotion is very hard.

Risks

- Literature is very advanced, reading more like a set of mathematical diagrams than a paper, so time taken to research is higher than typical projects.
- This heavy math base can make things very difficult to understand.
- Personal experience with machine learning is minimal, using it only for personal projects with image recognition and self driving toy cars.
- Both modelling the emotion and creating a prototype for a solution are very time intensive tasks, which will make following strict intrinsic deadlines important.

What?

Aim

Reduce the adverse mental health impacts of image based social media usage through modelling and production of an application solution.

How?

Objectives

1. Research and evaluate existing models for analysing mental states within text and image social media posts.

2. Utilise market research to identify common mental health issues from which to focus on.

3. Implement a mental state modelling system using machine learning focused on the prevalent mental health issues found in the market research.

4. Utilise this modelling system to design an appropriate solution, producing an interactive prototype.

5. Evaluate the potential impact of this prototype through market research with the same demographic as the previous.

Technology

- Python
- Natural Language Toolkit & OpenCV
- TensorFlow (Google)
- Instagram public API
- MLKit (Apple)
- Swift & iOS

Current Progress

Plan

- Before Semester One Exams – 14th – 25th January 2019
  - Background and market research complete.
  - Initial modelling solution, with basic data training.
  - Preliminary sketches of a solution based on research.
- After Exam Period
  - Rough draft of content - 22nd February
  - Finalisation of code and prototype – 8th March
  - First submission ready draft – 22nd March
  - Revisions to continue until submission – 3rd May

Summary

- Desire to model the impacts of social media on depression and then propose a solution.
- I will use colour space analysis, taking into account applied filters, to manually train the model based on self disclosure.
- TensorFlow & OpenCV will be the core technologies to do this.
- Images and content will be sourced from the public Instagram API.
- Finally, use iOS & Swift for a prototype, with an integrated MLKit model that can continually monitor for issues.