I am keen to run student projects that support research in biomedical engineering, as I have well-funded research through Monash Vision Group and the ARC Centre for Integrative Brain Function (CIBF).

For fibre-optical communications projects, see Bill Corcoran – though I will take on students with a desire to excel in research in this area.

See my web-page for my latest research results: http://www.ecse.monash.edu.au/staff/lowery/

To arrange a project, it is best if you email me, then come to see me, so we can discuss the best fit between your interest and skills and the project. arthur.lowery@monash.edu

Some ideas for possible projects are:

1. **Automated Test for Bionic Vision Cortical Implant Tiles**
   Developing an automated test bed to characterise the electrode currents of our tiles automatically. Will link X-Y stepper motors for scanning to automated recording of waveforms and also cameras to ensure that the recording probe does not crash into the electrodes. This is part of Monash Vision Group.

2. **Automated Interpretation of X-ray Images of Bionic Vision Electrodes**
   Developing software to interpret the results from low-vacuum X-ray images of our bionic vision tiles. The software should be able to predict the electrical areas of the electrodes from the X-ray images. This is part of Monash Vision Group.

3. **Computer Modelling of Stimulation Fields around Cortical Penetrating Electrodes**
   Modelling the electric fields around manufactured electrodes to deduce the required manufacturing tolerances. I expect this will use a “multi-physics” package like COMSOL, which is very popular for assessing electrostatic designs and widely used in industry. This is part of Monash Vision Group.

4. **Opto-genetic Cell Stimulation System**
   Low cost and portable system to stimulate light-sensitive channels in biological cell walls using multiple visible lasers. Possibly running with Physiology. A very hot topic! This is part of the ARC Centre for Integrative Brain Function (CIBF).

5. **Low-Noise Front Ends for EEG Recording Tiles**
   The idea is to turn our cortical-stimulating tiles into recording tiles. The initial work is on designing very sensitive low-noise ‘front ends’ that work in the presence of strong RF interference from the wireless-power system that powers-up the tile. Good for someone who really wants to understand how analogue electronics can be optimised! This is part of the ARC Centre for Integrative Brain Function (CIBF).

AJL Nov 2015