

HM811 - Computational Tools for Research

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1 Introduction

The HM811 assignment is to submit 3 programs which carry out tasks useful to my research, each of which must be in a different programming language. The available languages to choose from are:

- C
- Bash
- Perl
- L^AT_EX
- Octave/MATLAB
- R

2 Project Structure

The structure I've decided for my project is to build a docker image which will:

- Install the required packages and libraries.
- Pull Octave code from a repository.
- Run an Octave script to generate several plots as PDFs, and a series of images as PNGs.
- Render the PNGs into an animation using the FFMPEG library.
- Compile a L^AT_EX document which includes the animation, and the plots generated in the previous step.

3 Project Content

The content of the document which is the final output will be a brief overview of a class of optical illusions known as MacKay effects (including proper bibtex referencing of significant papers), which includes high-quality graphics of static stimuli which exhibit the effect. The second portion of the document will discuss future work on the MacKay effect and will include dynamic stimuli in the form of embedded MPEGs.

4 Project Stages

The project will have three primary stages:

1. Building a basic docker image.
2. Writing Octave code to generate relevant plots.
3. Writing \LaTeX document.