**Prototyping**

The functional prototyping for InteriAR consisted of three main technical questions:

* Is virtual wall colouring feasible to implement and what is the best method of doing so?
* Is “marked tracking” a viable method of us displaying and moving 3d objects in our augmented reality space?
* Will MongoDB be able to handle the volume of users and transactions the app may need in future?

There is a full write up of each prototype attached in the appendix. *Maybe don’t write this??*

Wall colouring

Mention the research into other apps? Or just say research in appendix?? Or not include appendix cause its too similar??

The wall colouring prototype was created on Processing 3 using the Ketai for Android library to access the camera on a mobile device. The software allows a user to tap a pixel on the live video feed, grabbing the RGB values from it. It then analyses every pixel on the camera feed and calculates whether they are similar enough to the grabbed colour. If they are, the pixel is repainted in red.



InteriAR wall colouring functional prototype v1

The prototype manages to successfully detect part of the surrounding wall, and avoid the more obviously differently coloured obstacles; however it also misses out large portions and does pick up some unwanted additions. Another factor is performance; when calculating colour distance on each pixel in the feed, especially on a mobile phone processor, the program starts to stutter.

We have learned a few things from this prototype:

* It is feasible to implement. Even on a very basic level this functioned in some capacity.
* Further research must be done into colour matching for improved accuracy.
* We need to look into improving the performance drastically, whether via grouping pixels together or relying on a different method of detection such as image segmentation.

TRIM ALL THIS FURTHER AND JUST REFER TO APPENDIX?? OR TRY FIT THEM ALL INTO ABOUT 600 WORDS?? Think that’s too much.