

Creating meaningful online assessment for photography courses through computer artificial intelligence and image content retrieval systems

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1 Executive summary

This project took as its basis the notion that automated, meaningful online assessment is challenging in tertiary environments due to the reliance on multiple choice questions and answers or some other binary form of right / wrong response. The relevance of this is even more problematic for practice based disciplines, such as photography, where skill development is intrinsically linked to some form of practical task or activity.

In addition to this, the global rise of online learning platforms, such as Coursera and MOOCs, has provided an increased awareness, and requirement, of how to measure a student's learning in an environment that often requires automated and instant feedback.

This project sought to develop an online application that provided a more task oriented approach to assessment, in the form of a tool that could be used to measure a student's response to a set task or problem. It premised that certain aspects of creative assessment in photography can be rational and procedural, and that measuring this within a contained online course provides rich and meaningful feedback to students about their progress.

The project aimed to address this through the development of computer artificial intelligence and image content recognition algorithms to be applied to a software development platform for integration into a website.

The project developed this application using the following parameters and assumptions:

- Students are required to watch a series of videos on the theory and practice of processing RAW (born digital & unedited) photographic images.
- Students are supplied with a task, requiring them to problem solve an outcome based on the skills learnt through the online video lessons.
- Students are supplied a RAW photographic image to download.
- Students process the image using commercial software such as Adobe Photoshop.
- Students upload the processed and converted image to the website.
- The computer program analyses the image against known variables for Exposure, Lens Correction, Shadow Clipping, Highlight Clipping and Sharpness.
- Students are presented with a result against each of the measured variables and a percentage variance as a graph (with acceptable tolerances).

2 Outcomes

The project has run concurrently with the development of a fully online course The Art of Photography, scheduled for delivery in semester 2 2016.

In addition to this course, the tool is being rolled out for multiple face to face courses in two programs, Bachelor of Arts (Fine Art) and Bachelor of Arts (Photography).

A joint paper is in development, for publication in a computer science journal.

Due to delays, the project has only recently reached alpha testing phase, and is in preparation for user testing and student focus group testing.

3 Project outcomes and impacts

3.1 Learning tool

The project developed an online learning tool and associated video materials.

Currently the project is finalising development, aligned with the School of Art Portal project, a website nearing completion. At this stage there is not direct data, however extensive user testing is in preparation for the inclusion of the program in the Online photography course being offered in Semester 2. Following the testing and gathering of data, this will be sent through for inclusion in this report.

3.2 Project issues

There were several issues effecting the timeline of this project:

Changes to ITS. I am now in the final stages of server access and hosting. Initially the program was to be hosted through MyCloud using a single virtual machine, however the nature of program now requires more 'power' and additional resources not anticipated at the beginning of the project. Although to be fair to the programmer and ITS, we all thought it would be fine – the program just got better!

In addition to this, additional support through the Global Learning by Design project (which was fantastic) actually increased the scope of the project, specifically the creation of the learning materials, which have been filmed, rush cut, draft edited, and are now entering sign off.

4 Dissemination strategies and outputs

The project outcomes will be primarily disseminated through Learning and Teaching activities and specific photography related courses. This will happen through:

- The learning videos and formative assessment task, in the form of a website
- The software application will be hosted through RMIT ITS and made available to photography courses that teach related skills.

In addition to the above, a co-authored paper is being written for publication outside of the university.

5 Evaluation of project outcomes

At this stage the project is finalising completion and preparing for user testing and student focus group activity.

The evaluation will be considered in relation to the following questions:

To what extent have the intended outcomes been achieved?

At this stage the planned outcomes have been achieved (the creation of the assessment program), however given the increase in scope, the application is not yet ready for primetime.

What measures, if any, have been put in place to promote sustainability of the project's focus and outcomes?

The change in ITS infrastructure will support this. The initial hosting (while considered adequate at first) is unsustainable for the ongoing viability of the project, and new support is being developed.