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Digital Art, Interactive Animation and Creative Expression in the Computer Science Curriculum

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There are skill shortages in the digital media sector that, in part, are addressed by digital upskilling across the arts and humanities. However, outside the few interdisciplinary arts-oriented institutions and specialist programmes, there is little cross-over of art and creative expression upskilling in traditional science and engineering programmes. This short paper accompanies a 2022 BCS Human-Computer Interaction Conference Interactions Gallery exhibit that challenges the current paradigm and showcases media content, exemplar animated artworks and interactive animations on the theme of Human-Computer Interaction from a first-year Computer Science module on animation and multimedia at Keele University that combines coding and creativity with art and algorithms.

Animation, Art, Interaction, Education, Processing

1. BIOGRAPHY

Sandra Woolley teaches Computer Animation and Multimedia to first-year Computer Science undergraduates at Keele University. Students are encouraged to consider themselves as digital artists as they explore the technical and compositional aspects of creating interactive and animated digital media. Co-authors Seb Heron, Joash Abejide and Matthew Chau are student animators whose works on the theme human-computer interaction are included in the interactions gallery exhibit showcase and the example imagery of this paper.

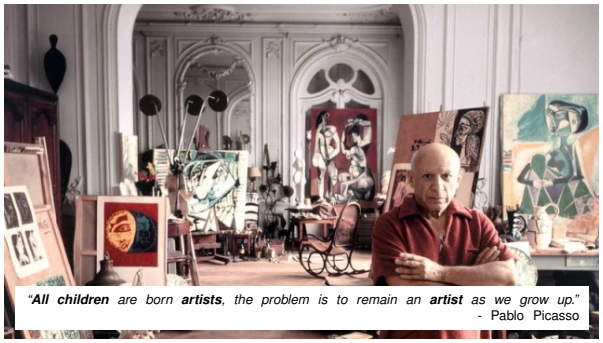

Figure 1: *"All children are born artists . . . "*

2. GALLERY EXHIBIT EXPERIENCE

The exhibit takes the visitor on a journey prefaced by the quote from Pablo Picasso that *"All children are born artists, the problem is to remain an artist as we grow up."* Observing, then, that few computer science undergraduates consider themselves to be artists, despite the fact that the majority are highly capable of creative achievement in the production of functional, meaningful, innovative and interactive digital media.

Exhibit visitors are taken from the most basic visual starting point of a single animated graphical primitive, through to multiple rotating and colourful graphical primitives and on to animated artworks followed by creative and interactive examples of student animations on the theme of human-computer interaction.

3. EXHIBIT IMAGERY

The journey starts with Picasso's quote, as shown in Figure 1. Simple graphical primitive animations coded in Processing then precede animations exemplified in Figures 2 and 3 depicting animated

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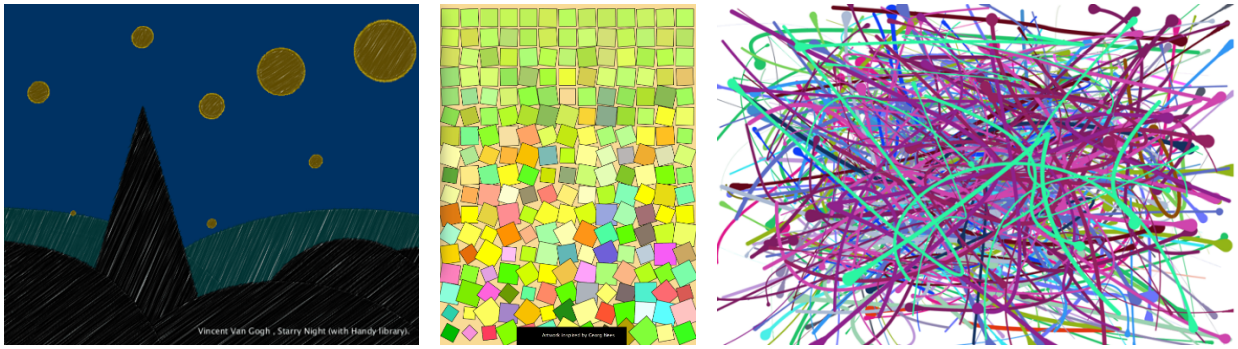

Figure 2: *Screenshots of exemplar animations inspired by artworks based on (left) van Gogh's 'Starry Night',(centre) Georg Nees' 'Schotter' and (right) Jackson Pollock's 'drip'-style painting.*

Figure 3: *Interactive animations on the theme of Human-Computer Interaction*

artworks and examples of students' interactive works.

4. RESEARCH RATIONALE

The rationale for 'Art for Computer Scientists' and the use of Processing as an open-source art medium for computer science undergraduates in the context of traditional computer science and engineering programmes was first presented at the 2021 BCS Electronic Visualisation for the Arts Conference (Woolley and Collins 2021) summarising the ethos of the Keele University first-year Computer Science animation and multimedia module (CSC-10026) and summarising the syllabus of interactive 2D and 3D graphics and coding concepts together with the principles of art, design and composition, and animation theory.

This exhibit complements and extends on this previous work by including new exemplar artwork-inspired animations, demonstrations of animated module media and examples of student animations on the theme of human-computer interaction.

ACKNOWLEDGMENTS

Thanks to Sean Clark whose 'Images in the Style of' (Clark 2022) inspired the introduction of animated artworks as a component of the module 'portfolio' coursework. Also, thanks to Eddie Collins and Tim Collins for contributing animated artwork exemplars.

REFERENCES

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