



School of Computing, Engineering, and the Built Environment Edinburgh Napier University

PHD STUDENT PROJECT

Funding and application details

Funding status: Self-funded students only

Application instructions:

Detailed instructions are available at <https://www.napier.ac.uk/research-and-innovation/research-degrees/how-to-apply>

Prospective candidates are encouraged to contact the Director of Studies (see details below) to discuss the project and their suitability for it.

Project details

Supervisory Team:

- DIRECTOR OF STUDY: Michael Smyth (Email: M.Smyth@napier.ac.uk)
- 2ND SUPERVISOR: Ingi Helgason

Subject Group: Applied informatics

Research Areas: Human Computer Interaction

Project Title: Tangible interfaces in creative practice.

Project description:

This research will investigate the benefits of tactile feedback during the manipulation of objects, in the early design phase by creative practitioners. A series of haptic interfaces will be designed and developed in order to evaluate their performance. The prototypes will be developed using for example, microprocessor kits or VR/AR headsets as appropriate to explore strategies for communicating tactile information.

The ability to experience the tactile quality of materials is a key attribute when creatives make design choices about the form and performance of a material. For example, the tactile quality of certain finishes associated with a particular material

could determine its use in a product. Or the weight of a product depending on the choice of materials. Access to a library of materials is not always an option, especially for small practices, and waiting for samples has the potential to disrupt the creative flow.

The research will investigate whether the addition of a haptic interface to support the manipulation of materials from a dataset would be of benefit creative practice. This will be achieved by creating a series of prototype interfaces that focus on the early phase of the design process and aim to bridge the gap between digital representations of materials and their physical attributes. These interfaces will form the basis of an investigation into how to represent the physical attributes of materials such that designers can narrow choices about what form a product might have as part of a wider search. In this example, several samples of the same material of different ages and exposed to different weather conditions could provide tactile information about the effect of weathering in different environments.

Perspective applicants are encouraged to contact the Supervisor before submitting their applications. Applications should make it clear the project you are applying for and the name of the supervisors.

References:

- [1] The Case for Haptic Props: Shape, Weight and Vibro-tactile Feedback | Proceedings of the 12th ACM SIGGRAPH Conference on Motion, Interaction and Games
- [2] StringTouch | Extended Abstracts of the 2019 CHI Conference on Human Factors in Computing Systems (acm.org)
- [3] Tangible Interfaces and Interactions in Sci-Fi Movies | Proceedings of the Fourteenth International Conference on Tangible, Embedded, and Embodied Interaction (acm.org)
- [4] TangibleTouch: A toolkit for designing surface-based gestures for tangible interfaces (acm.org)

Candidate characteristics

Education:

A second class honour degree or equivalent qualification in Computing or Design with a good fundamental knowledge of Interaction Design.

Subject knowledge:

- Computing
- Design

Essential attributes:

- Experience of fundamental Human Computer Interaction and User Experience
- Competent in Prototyping and Concept Development
- Knowledge of Creative Practice
- Good written and oral communication skills
- Strong motivation, with evidence of independent research skills relevant to the project.

Desirable attributes:

- An interest in Tinkering and Making across a variety of platforms