***SAVE before ticking 'Complete' or closing the form. --- If 'Complete' is ticked use CHECK IN/OUT to edit form.

Human Research Ethics Committee

Initial Approval Submission - New Project

THE UNIVERSITY OF NEWCASTLE AUSTRALIA

*I confirm I am applying for Initial approval for a new research project where the UoN HREC is the lead committee. ☑

*Tick to continue ☑

NEAF application

*Have you aleady determined that you will have to complete the *National Ethics Application Form* (NEAF), ie your research has the potential for significant risk? ☐ Yes ☑ No

Protocol Identification

*Project Title:

Augmenting visual search task with haptic properties

*Project summary:

The purpose of this research is to explore perceptual learning and the use of haptic technology in a visual search task. Undergraduate students from the University of Newcastle who meet specific selection criteria will be invited to take part in two fingerprint identification tasks. During each task, participants will be asked to identify and match fingerprints in a computer-based environment. Between the two tasks, participants may also be asked to take part in a training session. During this session, participants will receive feedback and advice on areas of interest within the fingerprint identification images.

Max 6 lines

Duration of Project

Provide the anticipated start and end dates for the whole of the project, including participant follow-up if applicable and data analysis.

*Anticipated start date: 13-Jan-2014

*Anticipated end date: 04-Jul-2014

*Are there any time-critical aspects relating to the research of which the HREC should be aware? Yes ☐ No ☑

Personnel - Review (Add Personnel - Review)

Smith, Shamus

Research Personnel

Name:

Smith, Shamus

CI / Supervisor	Start Date	End Date	Role
☑	04-Jul-2013		CI

Certification: Office use only

Certification	Begin	End
-	-	-

Research Personnel Not Listed

*Were any members of the research team not listed in the personnel picklist? ☐ Yes ☑ No

Student Researchers

*Was one or more people given the role of Student Researcher? ☐ Yes ☑ No

Project Funding/Support

Yes ☐ No ☑ *Is the research the subject of a contract / agreement / grant awarded from or under consideration by an internal or external grants body, sponsor, etc?

Approval From Other HRECs

Yes ☐ No ☑ *Has the research been approved, or is under consideration, by another Human Research Ethics Committee (HREC)?

*Tick to continue ☑

Type of Research

Does your project involve:

Yes ☐ No ☑ *Research to be conducted outside Australia involving participants NS4.8

Yes ☐ No ☑ *Research on workplace practices or possibly impacting on workplace relationships

Yes ☐ No ☑ *Deception or limited disclosure to participants NS2.3.1

Yes ☐ No ☑ *Access to existing data sets, databanks, or human tissue banks NS3.2

Yes ☐ No ☑ *Collection, extraction or use of human tissue (including cell lines), blood or other body fluids NS3.4

Yes ☐ No ☑ *Access to personally identifiable information / records / human tissue samples (including cell lines other than those acquired commercially) without specific consent from the individuals to whom the information/records relate NS2.3; NS2.3.6; NS3.4

Yes ☐ No ☑ *Human genetic testing / research NS3.5

Yes ☐ No ☑ *A cellular therapy

Yes ☐ No ☑ *Exposing participants to ionising radiation NS2.1

Yes ☐ No ☑ *Clinical trial under the CTN or CTX scheme

Yes ☐ No ☑ *Use of gametes or use or creation of embryos

Yes ☐ No ☑ *Use of drugs; alternative / complementary therapies or care; or surgical, or other therapeutic or diagnostic procedures and devices NS3.3

Yes ☐ No ☑ *An innovation or intervention which is not standard practice in the study population NS3.3

Yes ☐ No ☑ *Other type of research not covered above
Note: You must tick **Yes** if you have answered 'No' to all of above

Research Population

The category and source of participants being sought for this research are:

Select **all that apply** even if there will not be direct contact with the participants.
You must **select at least one.**

- [x] Adults 18 years of age or older
- [ ] Children, or young people under 18 years who are not University students NS4.2

- [ ] A focus on Aboriginal and Torres Strait Islander (ATSI) peoples, groups, communities or issues NS4.7
- [ ] A focus on women who are pregnant, and/or research involving the human foetus NS4.1
- [ ] A focus on people with a cognitive impairment, an intellectual disability, or a mental illness NS4.5
- [ ] Adult participants who will not be competent to give consent are expected to be recruited NS2.2.12
- [ ] People highly dependent on medical care who may be unable to give consent, eg unconscious or too ill NS4.4

- [ ] The general public

- [x] Students or staff of University of Newcastle
- [ ] Students or staff of other universities / colleges
- [ ] School children, ie recruited through schools

- [ ] Volunteer registers or databases
- [ ] Members of particular community groups/ organisations
- [ ] Employees of particular organisations
- [ ] Clients / patients of health service providers
- [ ] Hospital in-patients
- [ ] Clients of organisations / community services
- [ ] Prisoners or those held in detention

- [ ] People who have a sight or hearing impairment
- [ ] People with a specific health condition
- [ ] People in a dependent or unequal relationship with the researchers
- [ ] Participants not proficient in the English language

- [ ] Records / information about people without contact with those people
- [ ] Human tissue collections without contact with the donors
- [ ] People who could be exposed to civil, criminal or other proceedings as a result of the research

- [ ] Other

Research Methods/Techniques

The research methods / techniques to be used in the research are:

Select all that apply. You must **select at least one**.

- [x] Computer based tests
- [ ] Data linkage
- [ ] Focus groups
- [ ] Interviews face-to-face
- [ ] Interviews telephone
- [ ] Internet / web based research
- [ ] Observation of people
- [ ] Covert observation NS2.3.1
- [ ] Photographs of people

- [ ] Physical activities / exercises / tests
- [ ] Psychological tests

- [x] Questionnaire / survey / diary anonymous
- [ ] Questionnaire / survey / diary identifying
- [ ] Record / document analysis
- [ ] Taping audio / video

- [ ] Access to and/or use of information from a Commonwealth Agency
- [ ] Access to and/or use of information from a private sector organisation

- [ ] Case study
- [ ] Case-control study
- [ ] Epidemiological or other quantitative research
- [ ] Qualitative research
- [x] Randomised controlled trial
- [ ] Intervention study

- [ ] Administration of drug / medicine (incl complementary / alternative)
- [ ] Use of a placebo
- [ ] Use of a medical device
- [ ] Human stem cell therapy

- [ ] Other

*Of the tests or procedures to be used, are any on the HREC Register of Approved Tests and Procedures? No

*Provide details of other questionnaires / surveys / interview scripts / tests / instruments or procedures that are to be used and upload a copy with this submission when you get to the end of the form.

Use of a pre-session questionnaire to gain basic demographics of the participants. Participants will be measured on their accuracy (true positives vs false positive and false negative selections) and timing in a visual search task. Performance metrics will be collected by the computer-based test.

Consent Process

What method(s) of consent will be used to enable the research to be conducted? NS2.2

Select all that apply. You must **select at least one**.

- [x] Written informed consent
- [ ] Recorded informed consent

- [ ] Parent / Guardian / Carer consent
- [ ] Child's assent with parent / guardian consent
- [ ] Young person 16-17 years consent
- [ ] Child < 16 years consent

- [ ] Organisational consent, *ie from a CEO, Director, Manager, Principal, etc.*

- [ ] Implied consent
- [ ] Retrospective consent
- [ ] Waiver of informed consent sought
- [ ] Waiver of parent / guardian consent sought

- [ ] Existing consent

- [ ] Other

Research Sites

*List the research sites, ie the communities / schools / hospitals / organisations etc from which participants will be sourced.

University of Newcastle, Callaghan campus.

If more than 10, give number and type, eg "12 NSW government primary schools in the Hunter region"

*Is your research a single site or multi-centre project *(click on icon to select)*? Single site

Participant Numbers

*What is the total number of participants to be recruited at all sites involved in the research? 20

*What is the total number of participants covered by this application? 20

*What is the rationale for that number?

As this is a pilot study only a small sample is required. The experimental design requires two participant groups and we will aim for 10 participants per group. This is an exploratory study and only a small sample size is required in order to determine whether the current approach is worth pursuing further.

*Tick to continue ☑

Eligibility for Expedited Review

Yes ☐ No ☑ *Will participants be identifiable, either directly or indirectly, in reporting of the research?

Yes ☐ No ☑ *Are the potential participants in an unequal relationship? NS4.3

Yes ☐ No ☑ *Does the research involve physically invasive procedures? NS2.1

Yes ☑ No ☐ *Is there a risk of physical injury to participants? NS2.1

- Yes ☑ No ☐ *Is prior warning given to potential participants'
- Yes ☑ No ☐ *Will there be appropriate screening of potential participants to identify those at higher risk?
- Yes ☑ No ☐ *Will procedures be conducted by experienced and appropriately licensed/accredited person(s)?
- Yes ☑ No ☐ *Will there be compliance with relevant safety procedures?
- Yes ☑ No ☐ *Can the risks be easily negated, minimised or managed?

*Explain how the risk to participants associated with this will be negated, minimised or managed.

Physical risks in this project are minimal. Although haptic devices do provide force feedback by use of motors/gearing, the Phantom Omni to be used in this project can only produce a maximum force of 3.3 Newtons. Also the device has a safety mechanism to stop all force generation when high resistance from the user is detected. Primarily this is to protect the device from damage but this also protects the user. Participants will be provided with a demonstration of the device use and initial training. Participants with arm-based repetitive strain injuries (RSI), i.e. though mouse/keyboard use, will also be excluded.

Max 2,000 char

Yes ☐ No ☑ *Might the research involve pain or discomfort for participants? NS2.1

Yes ☑ No ☐ *Might the research cause participants psychological or emotional stress? NS2.1

- Yes ☑ No ☐ *Is prior warning given to potential participants?
- Yes ☑ No ☐ *Will there be appropriate screening of potential participants to identify those at higher risk?
- Yes ☐ No ☑ *Is the exposure likely to have a significant impact on participants or be potentially life threatening?
- Yes ☑ No ☐ *Can the risks be easily negated, minimised or managed?

*Explain how the risk to participants associated with this will be negated, minimised or managed.

Visual search tasks require a number of trials and this repetition can be stressful. Participants will be advised that they can leave the study at any time, without having to give a reason. Breaks between trials and tests will be incorporated into the experimental procedure. Participants will be informed that they will get no feedback on their performance from the final test and that all results will be analysed anonymously.

Max 2,000 char

Yes ☐ No ☑ *Does the research involve the collection of sensitive personal information?

Yes ☐ No ☑ *Could the research expose participants to economic loss or damage to their reputation? NS2.1

Yes ☐ No ☑ *Could the research have a negative impact on personal relationships? NS2.1

Yes ☐ No ☑ *Will potential participants be offered inducements that could be considered coercive? NS2.2.10; NS3.3.5

Project eligible for expedited review

*

Your project appears to qualify for Level 2 (L2) Expedited Review.
Tick to continue. ☑

Project Details

In the following sections, provide a brief 'plain English' description of the project. NS1

*Background to project:

Training for visual search tasks can be difficult when visual scenes are complex, e.g. with distractor objects, or when processed images are ambiguous. Real world examples include security tasks, e.g. viewing luggage scans at airports, and medical tasks, e.g. mammogram and histological slide review.

However, training experiences can be enhanced by adding sense modalities, for example audio and/or haptic feedback, to visual tasks. An common example is the use of haptic devices for medical skills training (Smith & Todd, 2007; VRST'07). It has also been shown that object category knowledge can transfer across visual and haptic modalities (Yildirim & Jacobs, 2013; Cognition 126).

This work will explore whether adding haptic representations to a visual search task can provide a measurable impact on training transfer to visual task skills.

Max 250 words

*Aims / hypotheses / questions:

The aim of the study is collect data on visual search task performance in an environment with and without haptic feedback. The hypothesis is that adding haptic feedback during training will positively impact task performance on a visual only test task. For this study a fingerprint identification task will be used as the visual search task. This is an exploratory study and the overall aim is provide evidence to support further investigation of new approaches to haptic-based learning.

Max 150 words

*Research design:

We will use an experimental-plus-control group design with two training groups. Participants will be randomly assigned to one of two groups and balanced for gender. Participants will complete a pre-session questionnaire to collect basic demographic data and document exclusion criteria (no CS students and no RSI injuries). The two groups will be VT (visual trained) and VHT (visual haptic trained).

The visual search task (VST) will involve fingerprint identification. All participants will be provided with a brief introduction to fingerprint identification, e.g. an overview of six main fingerprint types, with examples. Participants will then be tasked (VST 1) to match example fingerprints to sets of 10 distractor fingerprints. (This follows the method outlined in [Fraser-Mackenzie, et al (2013), Science and Justice 53] where "Suitable prints are then compared to potentially matching exemplars, taken from ten prints, in order to attempt to identify the source of the latent print"). Given that the participants are not expert forensic fingerprint examiners, the distractor fingerprints will be clear cut cases (i.e. "Highly Suitable" or "Highly Unsuitable") [Fraser-Mackenzie, et al., 2013].
After VST 1, participants will either receive further training using visual-based feedback (VT) or with visual and haptic-based feedback (VHT). Participants will then be given a second test (VST 2) using different examples. Training and testing times will be approximately 15 minutes each.

Performance metrics (accuracy and timing) and haptic interactions (VTH only) will be measured. All participants will be issued with ID codes and all data collection and analysis will be anonymous.

Max 250 words

*Potential value and significance of the research:

This work is a pilot study to explore basic haptic feedback in training for a visual search task. The value here is to gain insight into haptic-based learning in a training environment. The aim will be to publish the results of this study in a international conference (or journal) and use it as a preliminary step to submitting grant applications.

Max 250 words

*Experience and skills of researchers. NS1.1

I have 13 years of experience in running user studies in human-computer interaction.

Max 300 words

Participants

*How, and by whom, will potential participants be selected, and
(a) initially contacted, and
(b) recruited? NS1.4; NS3.1

Participants will be recruited with posters distributed around UoN campus. Only participants from outside the Computer Science discipline will be recruited to avoid any dependent relationship with the researcher (SL in Computer Science). Potential participants who respond to the poster will be emailed the pre-session questionnaire and example consent form. When the pre-session questionnaire has been returned (via email), participants will be invited to attend a training/test session and complete a consent form. Exclusion criteria (non-CS and no RSI injuries) will be on the recruitment poster and documented on the pre-session questionnaire.

Max 300 words

*Detail the procedure to be used to ensure voluntary and informed consent NS2.2

Participants will be self selecting by replying to request for participation posters. Informed written consent will also be obtained before any testing. Participants will have an opportunity to review the content documentation and questionnaire material electronically before being allocated to participant groups. Participants can withdraw at any time.

Max 300 words

*List the inclusion and exclusion criteria NS1.4

Groups will be balanced by gender, i.e. 5 per group.
Exclusion criteria will be CS students (to avoid unequal relationship) and RSI injuries (to avoid the device risk from the interaction device).

*What is required of participants?

All participants will be required to undertake two sets of visual search task tests (fingerprint matching) where they will need to identity primed objects in complex images with a number of distractor objects. Participants, depending on group allocation, may also get training on the visual search task activity, with or without use of a haptic device.

Max 300 words

*What, if any, benefits might there be from the research for participants or others? NS1.6

There are no explicit short term benefits to the participants. There is minimum risk to the participants to balance any initial lack of individual benefit. Long term benefits may be for society as a whole based on new technologies developed in the future based on this research.

Max 300 words

*Will participants receive any reimbursements / payments / rewards for participating in the research? NS2.2.10; NS3.3.5 ☑ Yes ☐ No

*Provide details:

Participants will receive $15 for their time. This is common practice in computer science user studies.

Max 300 words

Analysis and Reporting

*How will the information you receive be analysed / interpreted? What specific approaches or techniques (statistical or qualitative) will be employed?

We will conduct a repeated measures analysis of variance (using SPSS) with the between-subjects factor training (visual only, visual + haptics) and the within-subjects factor test point (test 1 and test 2). The dependent variable will be the visual search task score at each test point. If there is a significant interaction effect between group and
tests, we will examine differences between each test by group using pairwise comparisons with Bonferroni correction.

Max 300 words

*Detail how the results of the research will be reported / disseminated, including appropriate provision of results to participants. NS1.1; NS1.3; NS1.4; NS2.2.6; NS3.1.4; NS3.1.11

Depending on the quality of the results, we will aim to publish the results in either a conference (HCI, OzCHI) and/or journal article (IEEE Trans. on Haptics, ACM Trans. on Applied Perception) . Participants will be given the option of leaving their contact email address on the consent form so that they can be provided with a copy of any publications resulting from this study.

Max 300 words

Storage, Access and Disposal of Data

*Detail the mechanisms that will be in place to ensure appropriate storage, access and disposal of data.

All collected data will be stored in password protected encrypted archives using TrueCrypt. All paper forms, i.e. the consent forms, will be scanned and added to the archive and the physical copies destroyed. The archives will be destroyed five years after the end of the project.

Max 300 words

Safety Implications

Does the proposed research involve work on, use of, or exposure to any of the following?

Yes ☑ No ☐ *Cash reimbursements / payments to research participants
Yes ☐ No ☑ *Fieldwork / off-campus activity, eg interviews
Yes ☐ No ☑ *Recombinant DNA
Yes ☐ No ☑ *Genetically modified organisms
Yes ☐ No ☑ *Biologically hazardous micro-organisms
Yes ☐ No ☑ *Chemically hazardous materials
Yes ☐ No ☑ *Human body fluids or tissue
Yes ☐ No ☑ *Radioisotopes / unsealed sources
Yes ☐ No ☑ *Ionising radiation
Yes ☐ No ☑ *Non-ionising radiation
Yes ☐ No ☑ *Any other potential safety hazard for either participants or researchers?

You may need to submit a Safety Clearance application to the University's Health and Safety Team. Please refer to the Safety in Research and Teaching site for more information.

Confirmation

*Information I have provided in this submission is accurate and complete. ☑
(This will close all Help text.)

Comments

Please use this section if you would like to provide additional information regarding your research which has not been covered elsewhere in the submission, or if you wish to make comments about this submission form.

Declaration

In making this submission, I declare that:

- The research protocol conforms to the *National Statement on Ethical Conduct in Human Research, 2007*, which I have read.
- I undertake to conduct the research in accordance with the approved protocol, the *National Statement*, relevant legislation and the policies and procedures of the University of Newcastle.
- Where I am the project supervisor for the research described herein which will be conducted by a student of the University of Newcastle, I declare that I have provided guidance to the student in the design, methodology and consideration of ethical issues of the proposed research.
- I make this application on the basis that the information it contains is confidential and will be used by the University of Newcastle for the purposes of ethical review and monitoring of the research project described herein, and to satisfy reporting requirements to regulatory bodies. The information will not be used for any other purpose without my prior consent.

Yes ☑ No ☐ *Each member of the research team is being identified in this submission with his/her knowledge and consent; they have access to the submission; and I have made them aware of the requirement for the research to be conducted according to the approved protocol.

I have uploaded required documents as follows:

Yes *Peer Review Declaration
Yes *Head of School Declaration

Yes *Participant Information Statement(s)
NA *Verified translations of Participant Information Statement(s)
Yes *Participant Consent Form(s)
Yes *All recruitment material, eg advertisements, posters
Yes *Surveys / questionnaires
NA *Focus group / Interview schedule(s)
NA *Funding application(s) / Contract / Agreement not administred by University of Newcastle
NA *Approval(s) from other HRECs

*I have completed all requirements for this submission. ☑

Chief Investigator / Project Supervisor: Smith, Shamus

Date: 16-Jan-2014

Please don't forget to SAVE before ticking 'Complete' or closing the eform

Form published 1 September 2012