IMPORTANT: ALL FIELDS MUST BE COMPLETED. THE FORM SHOULD BE COMPLETED IN PLAIN ENGLISH UNDERSTANDABLE TO LAY COMMITTEE MEMBERS.

SEE NOTES IN STATUS BAR FOR ADVICE ON COMPLETING EACH FIELD. YOU SHOULD READ THE ETHICS APPLICATION GUIDELINES AND HAVE THEM AVAILABLE AS YOU COMPLETE THIS FORM.

APPLICATION FORM

SECTION A APPLICATION DETAILS

A1 **Project Title: Estimating chromatic adaptation in a museum environment using achromatic point setting with a tablet computer**

Date of Submission: 20/06/2016	Proposed Start Date: 29/06/16
UCL Ethics Project ID Number: 9357/001	Proposed End Date: 02/07/16

If this is an application for classroom research as distinct from independent study courses, please provide the following additional details:

Course Title: Course Number:

A2 **Principal Researcher**

Please note that a student – undergraduate, postgraduate or research postgraduate cannot be the Principal Researcher for Ethics purposes.

Full Name: Stuart Robson	Position Held: Head of Dept.
Address: Chadwick 108 Department of Civil, Environmental and Geomatic Engineering Gower Street London UK WC1E6BT	Email: s.robson@ucl.ac.uk Telephone: 0207 679 2726 Fax: N/A

Declaration To be Signed by the Principal Researcher

- I have met with and advised the student on the ethical aspects of this project design *(applicable only if the Principal Researcher is not also the Applicant).*
- I understand that it is a UCL requirement for both students & staff researchers to undergo Disclosure and Barring Service (DBS) Checks when working in controlled or regulated activity with children, young people or vulnerable adults. The required DBS Check Disclosure Number(s) is: N/A
- I have obtained approval from the UCL Data Protection Officer stating that the research project is compliant with the Data Protection Act 1998. My Data Protection Registration Number is: N/A (Anonymised data)
- I am satisfied that the research complies with current professional, departmental and university guidelines including UCL's Risk Assessment Procedures and insurance arrangements.
- I undertake to complete and submit the 'Continuing Review Approval Form' on an annual basis to the UCL Research Ethics Committee.
- I will ensure that changes in approved research protocols are reported promptly and are not initiated without approval by the UCL Research Ethics Committee, except when necessary to eliminate apparent immediate hazards to the participant.
- I will ensure that all adverse or unforeseen problems arising from the research project are reported in a timely fashion to the UCL Research Ethics Committee.
- I will undertake to provide notification when the study is complete and if it fails to start or is abandoned.

SIGNATURE: 

DATE: 30/06/2016

A3

Applicant(s) Details *(if Applicant is not the Principal Researcher e.g. student details):*

Full Name: Daniel Garside	
Position Held: MPhil/PhD Candidate	
Address: UCL, Chadwick Building, Gower Street, London, WC1E 6BT	Email: daniel.garside.14@ucl.ac.uk
	Telephone: 07588452204
	Fax: N/A
Full Name:	
Position Held:	
Address:	Email:
	Telephone:
	Fax:

A4

Sponsor/ Other Organisations Involved and Funding

a) Sponsor: ☐ **UCL** ☒ **Other institution**
If your project is sponsored by an institution other than UCL please provide details: EPSRC/Philips iCASE supported by British Museum

b) Other Organisations: If your study involves another organisation, please provide details. *Evidence that the relevant authority has given permission should be attached or confirmation provided that this will be available upon request.* Grant Museum and British Museum.

c) Funding: What are the sources of funding for this study and will the study result in financial payment or payment in kind to the department or College? *If study is funded solely by UCL this should be stated, the section should not be left blank.* Funding as part of doctoral iCASE project, provided by EPSRC/Philips

A5

Signature of Head of Department [or Chair of the Departmental Ethics Committee]
(This must not be the same signature as the Principal Researcher)

A. I have discussed this project with the principal researcher who is suitably qualified to carry out this research and I approve it.

I am satisfied that *[please highlight as appropriate]:*

(1) Data Protection registration:

- **has been satisfactorily completed**
- **has been initiated**
- **is not required**

(2) a risk assessment:

- **has been satisfactorily completed**
- **has been initiated**

(3) appropriate insurance arrangements are in place and appropriate sponsorship [funding] has been approved and is in place to complete the study. ☐ **Yes** ☐ **No**

(4) a Disclosure and Barring Service check(s):

- **has been satisfactorily completed**

- **has been initiated**
- **is not required**

Links to details of UCL's policies on the above can be found at: http://ethics.grad.ucl.ac.uk/procedures.php

****If any of the above checks are not required please clarify why below.**

B. Having read the 'criteria of minimal risk' as defined on page 3 of our Guidelines at: http://ethics.grad.ucl.ac.uk/forms/guidelines.pdf I recommend that this application should be considered by the Chair of the UCL REC ☒ Yes ☐ No

PRINT NAME: NICOLA CHRISTIE

SIGNATURE: 

DATE: 29.06.2016

SECTION B DETAILS OF THE PROJECT

B1 **Please provide a brief summary of the project in simple prose outlining the intended value of the project, giving necessary scientific background** *(max 500 words)*.

Colour constancy refers to the stable perception of object colour appearance, in spite of a change in illumination causing a change in the nature of the stimuli reaching an observer's eye. The process by which we adapt to this change in stimulus is the subject of this investigation.
This investigation will trial a new method for investigating this subject, and will also look to further the understanding of how humans adapt in mixed lighting environments. This knowledge should be valuable in the creation of general models of visual appearance, and for architectural lighting design.

B2 **Briefly characterise in simple prose the research protocol, type of procedure and/or research methodology (e.g. observational, survey research, experimental). Give details of any samples or measurements to be taken** *(max 500 words).*

The new proposed method requires an observer to select (with their finger) the most neutral point on a tablet computer screen displaying a range of colours. Each participant will be required to respond to roughly 10 stimuli. It is expected that this will take less than one minute. A subset of observers will also perform previously documented colour constancy tasks upon the same tablet, with comparable level and mode of interaction, and time requirements.

The data collected will consist of response locations on the touch interface, and the corresponding colourimetric co-ordinates. Metadata related to the participants' demographic will also be collected. The level of metadata has been carefully considered such that only vital metadata is recorded, and that such data will be non-identifying. (To be collected: Age, Gender, Location directly prior to participation, nationality, mother tongue, education level, details of known visual impairments, whether tinted eyeglasses had been worn recently)

Attach any questionnaires, psychological tests, etc. (a standardised questionnaire does not need to be attached, but please provide the name and details of the questionnaire together with a published reference to its prior usage).

B3

Where will the study take place (please provide name of institution/department)?
If the study is to be carried out overseas, what steps have been taken to secure research and ethical permission in the study country?
Is the research compliant with Data Protection legislation in the country concerned or is it compliant with the UK Data Protection Act 1998?

The study will initially take place in the public museum space at the Grant Museum. Letter of support from the institution is attached. Following an initial phase at the Grant Museum the experiment will be repeated at the British Museum (the project partner), in various public gallery spaces. The British Museum's project representative supports the experiment, and arrangements are currently being made for official institutional support and logistical considerations.

The data will be non-identifying. The data will be stored pysically and digitally on secure devices within the British Museum and UCL. The anonymised data will later be publicly hosted on the UCL Research Data Storage Service (or a comparable UCL or non-UCL service), such that other investigators might openly access and use the data.

B4

Have collaborating departments whose resources will be needed been informed and agreed to participate?
Attach any relevant correspondence.

All resources required will be available from CEGE.

B5

How will the results be disseminated, including communication of results with research participants?

Broad dissemination: results to be presented at AIC2016 (connference) in Sep 2016.

Communication to research participants: At the end of each run, feedback on input will be provided (there is no 'right' answer, but an overview of inputs will be output). If participants wish to be informed of experimental results of the entire group, they will be provided with a business card which has a link with which to sign up to a mailing list where news of publications will be communicated. Signing up to this communication will be very clearly at the volition of the paricipant.

B6

Please outline any ethical issues that might arise from the proposed study and how they are be addressed. *Please note that all research projects have some ethical considerations so do not leave this section blank.*

Colour blind observers - it is possible that results from observes with colour anomalous vision (colourblind observers) might be different to those from colour 'normal' observers. The approach taken in similar experiments has been to record as metadata whether an observer knows of any vision abnormalities, and then later analyse whether for the specific experiment there is a meaningful effect of such abnormalities. (It has often been the case that there has been negligible functional difference, and so data from these observers has been retained.)

Minors will not be excluded from the experiment, with the exception of those who might be presumed to not understand the experimental procedure. This is the root of the minimum age listed below of 7. Minors will not be approached, not directed in the experimental procedure, nor supervivsed, nor educated. In the case that a child wishes to take part in the experiment, communication and instruction will be directed to that child's parent or guardian, in order that the experimenter will not be in a position of 'instructor'.

The exclusion of children would be undesirable on two counts. 1- Exclusion (where people actively want to participate, particularly as a family group) is awkward and might be seen as derogatory. 2 - age is a meaningful variable in the experiment.

DBS check is not required as this research does not involve the 'teaching, training or instruction' of minors or vulnerable adults. In the situation that minors or vulnerable adults would be involved in the research, they would participate explicitly under the instruction/supervision of a parent/carer. Specifically in regards to UK law, this research does not constitute a 'Regulated' activity as defined by the 'Safeguarding Vulnerable Groups Act 2006', (2006 c. 47, SCHEDULE 4, Part 1, Activities, Section 2 (1)) (http://www.legislation.gov.uk/ukpga/2006/47/schedule/4/paragraph/2); does not occur in a location listed in the same document in section Schedule 4, Part 1, Establishments, Section 3; and is not performed by a

person in a role listed as an excepted profession in Schedule 1 of the 'Rehabilitation of Offenders Act Exception Order 1975' (http://www.legislation.gov.uk/uksi/1975/1023/made).

Data Protection registration not required as all data will be completely non-identifying. UCL Legal Services, Form 2: Research Registration Form: "Projects using anonymised data do not have to be registered with the Data Protection Team and you do not have to worry about compliance with the Act."

SECTION C DETAILS OF PARTICIPANTS

C1

Participants to be studied

C1a. Number of volunteers:	200
Upper age limit:	N/A
Lower age limit:	7

C1b. Please justify the age range and sample size:

The sample size listed above is a goal size, but a lower number would still be valuable for the experimental exploration.

Historically it is normal for vision experiments to run with <30 observers. Recently however, in part due to the increasing abilities of technology there has been a trend for increasing the number of participants in order to increase the statistical significance of results.

Considering the minimal time and effort required from observers to participate, compared with the amount of time and effort involved in setting up the experiment, and also considering that the effect of time of day/day of the week would be studied, it makes sense to invisage a sitution where for several days the experiment was manned, with the number of observers being dependent upon the number of interested visitors who were willing to participate.

C2

If you are using data or information held by a third party, please explain how you will obtain this. You should confirm that the information has been obtained in accordance with the UK Data Protection Act 1998.

N/A

C3

Will the research include children or vulnerable adults such as individuals with a learning disability or cognitive impairment or individuals in a dependent or unequal relationship? ☒ **Yes** ☐ **No**

How will you ensure that participants in these groups are competent to give consent to take part in this study? *If you have relevant correspondence, please attach it.*

This research will not specifically aim to work with the above groups, but there seems to be no reason to exclude the above groups. Where there are uncertainties about an individual's ability to consent to participation, that individual will not be allowed to participate.

C4

Will payment or any other incentive, such as gift service or free services, be made to any research participant?

☐ **Yes** ☒ **No**

If yes, please specify the level of payment to be made and/or the source of the funds/gift/free service to be used.

N/A

Please justify the payment/other incentive you intend to offer.

There will be no incentive for taking part in the experiment, other than the opportunity to contribute to a scientific experiment. It is envisaged that no incentive is required considering the educational nature of a museum visit and the minimal amount of effort required for participation on the part of the participant.

C5

Recruitment

(i) Describe how potential participants will be identified:

The participants will be self identifying from the group of 'British Museum Visitors'. The experimentor (Daniel Garside) will wear clothing which clearly indicates 'I'm running a scientific experiment' (probably a UCL T-shirt), and it is expected that members of the public will approach the experimetor, particularly upon seeing other participants participating.

(ii) Describe how potential participants will be approached:

As above, it is likely that they will not be approached, and that in fact they will approach the experimentor. If this does not occur, then gallery visitors might be approached (with as little bias as possible) and presented with a question such as 'would you like to play a quick game in the name of science?'

(iii) Describe how participants will be recruited:

See above.

Attach recruitment emails/adverts/webpages. A data protection disclaimer should be included in the text of such literature.

C6

Will the participants participate on a fully voluntary basis? ☒ **Yes** ☐ **No**

Will UCL students be involved as participants in the research project? ☐ **Yes** ☒ **No**

If yes, care must be taken to ensure that they are recruited in such a way that they do not feel any obligation to a teacher or member of staff to participate.

Please state how you will bring to the attention of the participants their right to withdraw from the study without penalty?

See attached verbal experiment introduction.

C7

CONSENT

Please describe the process you will use when seeking and obtaining consent.

The attached consent form will to read aloud to participants before the experiment, and verbal consent will be sought through repitition of phrases. (See final section of 'Information and Consent') Printed copies of this information will be available for participants to take after the experiment.

A copy of the participant information sheet and consent form must be attached to this application. For your convenience proformas are provided in C10 below. These should be filled in and modified as necessary.

In cases where it is not proposed to obtain the participants informed consent, please explain why below.

C8	**Will any form of deception be used that raises ethical issues? If so, please explain.** At the start of the experiment simple instructions and guidielines for participation will be verbally explained. The full nature of the experiment as it relates to colour constancy will not be explained before participation, as this would likely bias the results. However, it is considered unlikely that this level of detail would be requested, and where it were it could be provided after the experiment.

C9	**Will you provide a full debriefing at the end of the data collection phase?** ☐ **Yes** ☒ **No** If 'No', please explain why below. It is thought that the participants will not require debrieifing as the experiment is relatively quick and simple to perform, and should have no lasting effect.

C10	**Information Sheets And Consent Forms** **A poorly written Information Sheet(s) and Consent Form(s) that lack clarity and simplicity frequently delay ethics approval of research projects.** The wording and content of the Information Sheet and Consent Form must be appropriate to the age and educational level of the research participants and clearly state in simple non-technical language what the participant is agreeing to. Use the active voice e.g. "we will book" rather than "bookings will be made". Refer to participants as "you" and yourself as "I" or "we". An appropriate translation of the Forms should be provided where the first language of the participants is not English. If you have different participant groups you should provide Information Sheets and Consent Forms as appropriate (e.g. one for children and one for parents/guardians) using the templates below. Where children are of a reading age, a written Information Sheet should be provided. When participants cannot read or the use of forms would be inappropriate, a description of the verbal information to be provided should be given. Please ensure that you trial the forms on an age-appropriate person before you submit your application.

Information Sheet for in Research Studies

You will be given a copy of this information sheet.

Title of Project:

This study has been approved by the UCL Research Ethics Committee (Project ID Number):

Name

Work Address

Contact Details (*For students, we strongly advise against the use of a personal contact number)

We would like to invite to participate in this research project.

Details of Study:

Please discuss the information above with others if you wish or ask us if there is anything that is not clear or if you would like more information.

It is up to you to decide whether to take part or not; choosing not to take part will not disadvantage you in any way. If you do decide to take part you are still free to withdraw at any time and without giving a reason.

All data will be collected and stored in accordance with the Data Protection Act 1998.

Thank you for reading this information sheet and for considering take part in this research.

When you have completed your Information Sheet, please DELETE the advice section below from your application form before submitting it to the Committee.

Details of Study MUST include the following:

- Aims of the research and possible benefits.
- Who you are recruiting
- What will happen if the participant agrees to take part (when, where, how long etc)
- Any risks (e.g. need for disclosure of information to a third party, possibility for distress)
- Possible benefits (it is good practice to offer participants a copy of the final report)
- Arrangements for ensuring anonymity and confidentiality (see optional statements below for examples). To ensure compliance with the Data Protection Act participants must be informed of what information will be held about them and who will have access to it (this relates to information that is identifiable or could potentially be linked back to an individual.)

Statements which researchers MIGHT also include as appropriate:

- A decision to withdraw at any time, or decision not to take part, will not affect the standard of care/education you receive.
- If you agree to take part you will be asked whether you are happy to be contacted about participation in future studies. Your participation in this study will not be affected should you choose not be re-contacted.
- You may withdraw your data from the project at any time up until it is transcribed for use in the final report (*insert date)*.
- Recorded interviews will be transcribed (written up) and the tape will then be wiped clear.
- If you decide to take part you will be given this information sheet to keep and be asked to sign a consent form.
- Submission of a completed questionnaire implies consent to participate.
- As participation is anonymous it will not be possible for us to withdraw your data once you have returned your questionnaire.
- What if I have further questions, or if something goes wrong? If this study has harmed you in any way or if you wish to make a complaint about the conduct of the study you can contact UCL using the details below for further advice and information:
  Student researchers: Insert the name and full UCL contact address and number of your supervisor.
  *Staff researchers: Please insert the following: The Chair, *Insert full address details for the UCL Research Ethics Committee, ethics@ucl.ac.uk

Informed Consent Form for in Research Studies

Please complete this form after you have read the Information Sheet and/or listened to an explanation about the research.

Title of Project:

This study has been approved by the UCL Research Ethics Committee (Project ID Number):

Thank you for your interest in taking part in this research. Before you agree to take part, the person organising the research must explain the project to you.

If you have any questions arising from the Information Sheet or explanation already given to you, please ask the researcher before you to decide whether to join in. You will be given a copy of this Consent Form to keep and refer to at any time.

Participant's Statement

I

- have read the notes written above and the Information Sheet, and understand what the study involves.
- understand that if I decide at any time that I no longer wish to take part in this project, I can notify the researchers involved and withdraw immediately.
- consent to the processing of my personal information for the purposes of this research study.
- understand that such information will be treated as strictly confidential and handled in accordance with the provisions of the Data Protection Act 1998.
- agree that the research project named above has been explained to me to my satisfaction and I agree to take part in this study.
- Agree that my data, after it has been fully anonymised, can be shared with other researchers *[to satisfy Research Council funded projects as Research Councils have changed their guidance regarding data sharing]*

Signed: Date:

When you have completed your Informed Consent Form, please DELETE the advice section below from your application form before submitting it to the Committee.

Statements which researchers MIGHT include as appropriate:

- I understand that my participation will be taped/video recorded and I consent to use of this material as part of the project.
- I understand that I must not take part if
- I agree to be contacted in the future by UCL researchers who would like to invite me to participate in follow-up studies.
- I understand that the information I have submitted will be published as a report and I will be sent a copy. Confidentiality and anonymity will be maintained and it will not be possible to identify me from any publications.
- I understand that I am being paid for my assistance in this research and that some of my personal details will be passed to UCL Finance for administration purposes.
- I agree that my non-personal research data may be used by others for future research. I am assured that the confidentiality of my personal data will be upheld through the removal of identifiers.

This is not an exhaustive list and you should consider whether you need to amend any of these statements or design different ones that are more applicable to your research.

SECTION D DETAILS OF RISKS AND BENEFITS TO THE RESEARCHER AND THE RESEARCHED

D1	**Have UCL's Risk Assessment Procedures been followed?** ☒ **Yes** ☐ **No** If **No**, please explain. See attached risk assessment.

D2 **Does UCL's insurer need to be notified about your project before insurance cover can be provided?** ☐ **Yes** ☒ **No**

The insurance for all UCL studies is provided by a commercial insurer. For the majority of studies the cover is automatic. However, for a minority of studies, in certain categories, the insurer requires prior notification of the project before cover can be provided.

If **Yes**, please provide confirmation that the appropriate insurance cover has been agreed. *Please attach your UCL insurance registration form and any related correspondence.*

This experiment does not fall under the conditions discussed at:

http://ethics.grad.ucl.ac.uk/uclinsurance.php

and therefore insurance is automatic as described above.

Confirmation of this has been provided by Richard Sharp (Departmental Manager for CEGE)

D3 **Please state briefly any precautions being taken to protect the health and safety of researchers and others associated with the project (as distinct from the research participants).**

I shall stay hydrated and take breaks from standing as required.

D4 **Will these participants participate in any activities that may be potentially stressful or harmful in connection with this research?** ☐ **Yes** ☒ **No**

If **Yes**, please describe the nature of the risk or stress and how you will minimise and monitor it.

I cannot envisage a situation whereby this experiment might cause any distress or harm.

D5 **Will group or individual interviews/questionnaires raise any topics or issues that might be sensitive, embarrassing or upsetting for participants?**

If **Yes,** please explain how you will deal with this.

No formal interview. After the experiment limited demographic questions will be asked via the tablet computer, with users providing touch response. In the case a participant wishes not to answer a specific question, there will be a clear option for it to be skipped.

D6

Please describe any expected benefits to the participant.

None.

D7

Specify whether the following procedures are involved:

Any invasive procedure(s) ☐ **Yes** ☒ **No**

Physical contact ☐ **Yes** ☒ **No**

Any procedure(s) that may cause mental distress ☐ **Yes** ☒ **No**

Please state briefly any precautions being taken to protect the health and safety of the research participants.

The screen will cleaned with antibacterial wipes as required.

D8

Does the research involve the use of drugs? ☐ **Yes** ☒ **No**

If **Yes**, please name the drug/product and its intended use in the research and then complete Appendix I

N/A

Does the project involve the use of genetically modified materials? ☐ **Yes** ☒ **No**

If **Yes**, has approval from the Genetic Modification Safety Committee been obtained for work? ☐ Yes ☒ No

If **Yes**, please quote the Genetic Modification Reference Number: N/A

D9

Will any non-ionising radiation be used on the research participant(s)? ☐ **Yes** ☒ **No**

If **Yes**, please complete Appendix II.

D10

Are you using a medical device in the UK that is CE-marked and is being used within its product indication? ☐**Yes** ☒ **No**

If **Yes**, please complete Appendix III.

CHECKLIST

Please submit ether 12 copies (1 original + 11 double sided photocopies) of your completed application form for full committee review or 3 copies (1 original + 2 double sided copies) for chair's action, together with the appropriate supporting documentation from the list below to the UCL Research Ethics Committee Administrator. You should also submit your application form electronically to the Administrator at: ethics@ucl.ac.uk

Documents to be Attached to Application Form (if applicable)	Ticked if attached	Tick if not relevant
Section B: Details of the Project		
• Questionnaire(s) / Psychological Tests	☐	☒
• Relevant correspondence relating to involvement of collaborating department/s and agreed participation in the research.	☒	☐
Section C: Details of Participants		
• Parental/guardian consent form for research involving participants under 18	☐	☒
• Participant/s information sheet	☒	☐
• Participant/s consent form/s	☒	☐
• Advertisement	☐	☒
Section D: Details of Risks and Benefits to the Researcher and the Researched		
• Insurance registration form and related correspondence	☐	☒
Appendix I: Research Involving the Use of Drugs		
• Relevant correspondence relating to agreed arrangements for dispensing with the pharmacy	☐	☒
• Written confirmation from the manufacturer that the drug/substance has has been manufactured to GMP	☐	☒
• Proposed volunteer contract	☐	☒
• Full declaration of financial or direct interest	☐	☒
• Copies of certificates: CTA etc…	☐	☒
Appendix II: Use of Non-Ionising Radiation		
Appendix III: Use Medical Devices		

Please note that correspondence regarding the application will normally be sent to the Principal Researcher and copied to other named individuals.