University of Nottingham Ningbo China

Research Ethics Checklist for Undergraduate and Taught Masters Students

[strongly informed by the ESRC (2012) *Framework for Research Ethics*]

A checklist should be completed for **every** research project or thesis where the research involves the **participation of people**, **the use of secondary datasets or archives relating to people and/or access to field sites or animals**. It will be used to identify whether a full application for ethics approval needs to be submitted.
You must not begin data collection or approach potential research participants until you have completed this form, received ethical clearance, and submitted this form for retention with the appropriate administrative staff.

Completing the form includes providing brief details about yourself and the research in Sections 1 and 2 and ticking some boxes in Sections 3 and/or 4, 5, 6. **Ticking a shaded box in Sections 3, 4, 5 or 6 requires further action by the researcher**. Two things need to be stressed:

- Ticking one or more shaded boxes does **not** mean that you cannot conduct your research as currently anticipated; however, it does mean that further questions will need to be asked and addressed, further discussions will need to take place, and alternatives may need to be considered or additional actions undertaken.
- Avoiding the shaded boxes does **not** mean that ethical considerations can subsequently be 'forgotten'; on the contrary, research ethics - for everyone and in every project – should involve an ongoing process of reflection and debate.

The following checklist is a starting point for an ongoing process of reflection about the ethical issues concerning your study.

SECTION 1: THE RESEARCHER(S)

1.1: Name of principal researcher (in CAPITALS):

YIWEI LI

XINNA SU

ZHITONG GUO

ZELIN XIA

ANG LI

YUYANG ZHANG

1.2: Status: ☒ Undergraduate student

☐ Postgraduate taught student

1.3: School/Division:

University of Nottingham Ningbo, China/Computer Science

1.4: Student ID number:

YIWEI LI 20513831

XINNA SU 20514175

ZHITONG GUO 20513519

ZELIN XIA 20513999

ANG LI 20514282

YUYANG ZHANG 20514470

1.5: Degree programme:

BSc Hons Computer Science

1.6: Module name/number:

Software Engineering Group Project /COMP2043

1.7: Email address:

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scyxs4@nottingham.edu.cn

scyzg4@nottingham.edu.cn

scyzx5@nottingham.edu.cn

scyal8@nottingham.edu.cn

scyyz26@nottingham.edu.cn

1.8: Names of other project members (if applicable):

1.9: Name of supervisor for dissertations; module convenor or staff member for other research projects:

Kian Ming Lim ; Dave Towey

	Yes	**No**
1.10: I have read the University of Nottingham's *Code of Research Conduct and Research Ethics* (2021) and agree to abide by it: code-of-research-conduct-and-research-ethics.pdf (nottingham.edu.cn)	☒	☐
1.11: (If applicable) I have familiarized myself with the "Internet Research: Ethical Guidelines 3.0" accessible at: http://aoir.org/reports/ethics3.pdf	☒	☐
1.12: When conducting research on people (Section 5) I will prepare both a *participant consent form* as well as a *participant information sheet.* I am aware that the following templates - "Participant consent form", and - "Participant Information Sheet", (English and Chinese) are available on the Ethics webpage: https://www.nottingham.edu.cn/en/research-and-business/ethics.aspx	☒	☐

SECTION 2: THE RESEARCH

2.1: Title of project:

AI-Powered Digital Signage for Targeted and Personalized Advertisement

Please provide brief details (50-150 words) about your proposed research, as indicated in each section

The project will focus on developing an AI-driven digital signage system to deliver targeted and personalized advertising. The system will use computer vision analysis to analyze demographic information such as age, gender, emotions, and ethnicity of pedestrians through camera input, and generate customized advertising content based on this through a large language model (LLM). The project aims to customize advertising in real time based on audience characteristics, optimize advertising relevance, and increase engagement and effectiveness. Data collection will be limited to demographic data (such as age, gender, ethnicity, etc.), and CV data will not be stored in the database. Data analysis will be carried out during the feedback phase and will be collected only through user confirmation in the form of a questionnaire. The entire system will prioritize user privacy, and the system will comply with ethical guidelines and data protection regulations. The final product will include a prototype and detailed analysis to optimize future campaigns.

2.2: Research question(s) or aim(s)

Research questions：

How can computer vision effectively analyze demographic characteristics such as age, gender, emotion, and ethnicity in a real-time digital signage environment?

How can the integration of large language models enhance the personalization of ads based on analyzed demographic data?

What are the effects of targeted advertising on audience engagement and behavior in public spaces?

How to maintain data privacy and ethical considerations when collecting and processing demographic information for advertising purposes?

Research aims：

Develop a system to accurately analyze demographic characteristics in real time using computer vision.

Study the effectiveness of personalized advertising generated by large language models based on demographic analysis.

Measure the impact of customized advertising on audience engagement metrics.

Develop strategies to comply with ethical standards and data protection laws when collecting and analyzing demographic information.

2.3: Summary of Method(s) of data collection

We will use online benchmark datasets that are available for education or research purposes for training of the AI models. As for the feedback to be collected through questionnaires during the advertising campaign phase, participants will have the opportunity to confirm their demographic characteristics, such as age, gender, mood and ethnicity, and provide insights into their engagement with the advertisement. This approach will enable the collection of anonymous demographic data that can be used to effectively tailor advertising, while complying with ethical guidelines and data protection regulations.

2.4: Proposed site(s) of data collection

Data collection will be conducted in places where digital signage is deployed, such as the buildings of UNNC campus. These locations were chosen because of their high foot traffic and diverse demographics, providing a rich environment for collecting demographic data. It is worth noting that when we collect the demographic characteristics, privacy must be ensured.

2.5: How will access to participants and/or sites be gained?

Participants will be made aware of the study through clear signage near the digital displays, which will detail the purpose of the data collection and the measures taken to protect their privacy. Participation will be encouraged through feedback mechanisms, such as structured questionnaires that allow individuals to voluntarily provide demographic information and insights about their experience with advertising.

SECTION 3: RESEARCH INVOLVING USE OF SECONDARY DATASETS OR ARCHIVES RELATING TO PEOPLE

If your research involves use of secondary datasets or archives relating to people all questions in Section 3 **must** be answered. If it does not, please tick the 'not relevant' box and go to Section 4.

NOT RELEVANT	☐

Please answer each question by ticking the appropriate box.

	Yes	No
3.1: Is the risk of disclosure of the identity of individuals low or non-existent in the use of this secondary data or archive?	☒	☐
3.2: Have you complied with the data access requirements of the supplier (where relevant), including any provisions relating to presumed consent and potential risk of disclosure of sensitive information?	☒	☐

SECTION 4: RESEARCH INVOLVING ACCESS TO FIELD SITES AND ANIMALS

If your research involves access to field sites and/or animals all questions in Section 4 **must** be answered. If it does not, please tick the 'not relevant' box and go to Section 5.

NOT RELEVANT	☒

Please answer each question by ticking the appropriate box.

	Yes	No
4.1: Has access been granted to the site?	☐	☐
4.2: Does the site have an official protective designation of any kind?	☐	☐
If yes, have the user guidelines of the body managing the site a) been accessed?	☐	☐
b) been integrated into the research methodology?	☐	☐
4.3: Will this research place the site, its associated wildlife and other people using the site at any greater physical risks than are experienced during normal site usage?	☐	☐
4.4: Will this research involve the collection of any materials from the site?	☐	☐
4.5: Will this research expose the researcher(s) to any significant risk of physical or emotional harm?	☐	☐
4.6: Will the research involve vertebrate animals (fish, birds, reptiles, amphibians, mammals) or the common octopus (*Octopus vulgaris*) in any capacity?	☐	☐
If yes, will the research with vertebrates or octopi involve handling or interfering with the animal in any way or involve any activity that may cause pain, suffering, distress or lasting harm to the animal?	☐	☐

SECTION 5: RESEARCH ON PEOPLE

If your research involves the participation of people all questions in Section 5 **must** be answered.

Please answer each question by ticking the appropriate box.

	Yes	No
5.1: Does the study involve participants age 16 or over who are unable to give informed consent? (e.g. people with cognitive impairment, learning disabilities, mental health conditions, physical or sensory impairments?	☐	☒
5.2: Does the research involve other vulnerable groups such as children (**aged under 16**) or those in unequal relationships with the researcher? (e.g. your own students)	☐	☒
5.3: Will this research require the cooperation of a gatekeeper* for initial access to the groups or individuals to be recruited?	☐	☒
5.4: Will this research involve discussion of sensitive topics (e.g. sexual activity, drug use, physical or mental health)?	☐	☒
5.5: Could the study induce psychological stress or anxiety or cause harm or negative consequences beyond the risks encountered in normal life?	☐	☒
5.6: Are drugs, placebos or other substances (e.g. food substances, vitamins) to be administered to the study participants or will the study involve invasive, intrusive or potentially harmful procedures of any kind?	☐	☒
5.7: Will this research involve people taking part in the study without their knowledge and consent at the time?	☐	☒
5.8: Does this research involve the internet or other visual/vocal methods where people may be identified?	☒	☐
5.9: Will this research involve access to personal information about identifiable individuals without their knowledge or consent?	☐	☒
5.10: Does the research involve recruiting members of the public as researchers (participant research)?	☐	☒
5.11: Will the research involve administrative or secure data that requires permission from the appropriate authorities before use?	☐	☒
5.12: Is there a possibility that the safety of **the researcher** may be in question?	☐	☒
5.13: Will financial inducements (other than reasonable expenses and compensation for time) be offered to participants?	☐	☒

**Gatekeeper- a person who controls or facilitates access to the participants*

B. Before starting data collection

	Yes	No
6.12: My full identity will be revealed to all research participants.	☒	☐
6.13: All participants will be given accurate information about the nature of the research and the purposes to which the data will be put. (*An example of a Participant Information Sheet is available for you to amend and use* at xxxxx) *http://www.nottingham.edu.cn/en/research/documents/participant-information-sheet-in-english-and-chinese.doc*	☒	☐
6.14: All participants will freely consent to take part and, where appropriate, this will be confirmed by use of a consent form. Consent Form is available, for you to amend and use, at: https://www.nottingham.edu.cn/en/research-and-business/documents/ethics/participant-consent-form.doc	☒	☐
6.15: All participants will freely consent to take part, but due to the qualitative nature of the research a formal consent form is either not feasible or is undesirable and alternative means of recording consent are proposed.	☐	☒
6.16: A signed copy of the consent form or (where appropriate) an alternative record of evidence of consent will be held by the researcher.	☒	☐
6.17: It will be made clear that declining to participate will have no negative consequences for the individual.	☒	☐
6.18: Participants will be asked for permission for quotations (from data) to be used in research outputs where this is intended.	☒	☐
6.19: I will inform participants how long the data collected from them will be kept.	☒	☐
6.20: Incentives (other than basic expenses) will be offered to potential participants as an inducement to participate in the research. (Here any incentives include cash payments and non-cash items such as vouchers and book tokens.)	☐	☒
6.21: For research conducted within, or concerning, organisations (e.g. universities, schools, hospitals, care homes, etc) I will gain authorisation in advance from an appropriate committee or individual.	☒	☐

C. During the process of data collection

	Yes	No
6.25: I will provide participants with my University contact details, and those of my supervisor, so that they may get in touch about any aspect of the research if they wish to do so.	☒	☐
6.26: Participants will be guaranteed anonymity only insofar as they do not disclose any illegal activities.	☒	☐
6.27: Anonymity will not be guaranteed where there is disclosure or evidence of significant harm, abuse, neglect or danger to participants or to others.	☒	☐
6.28: All participants will be free to withdraw from the study at any time, including withdrawing data following its collection.	☒	☐
6.29: Data collection will take place only in public and/or professional spaces (e.g. in a work setting	☒	☐
6.30: Research participants will be informed when observations and/or recording is taking place.	☒	☐
6.31: Participants will be treated with dignity and respect at all times.	☒	☐

D. After collection of data

	Yes	No
6.32: Where anonymity has been agreed with the participant, data will be anonymised as soon as possible after collection.	☒	☐
6.33: All data collected will be stored in accordance with the requirements of the University's Code of Research Conduct	☒	☐
6.34: Data will only be used for the purposes outlined within the participant information sheet and the agreed terms of consent.	☒	☐
6.35: Details which could identify individual participants will not be disclosed to anyone other than the researcher, their supervisor and (if necessary) the Research Ethics Panel and external examiners without participants' explicit consent.	☒	☐

E. After completion of research

	Yes	No
6.37: Participants will be given the opportunity to know about the overall research findings.	☒	☐
6.38: All hard copies of data collection tools and data which enable the identification of individual participants will be destroyed.	☒	☐

SECTION 7: ETHICAL APPROVAL

(Complete either Part A or part B)

Part A

Student's declaration of ethical research

If you did NOT tick any of the shaded boxes *in Sections 3, 4, 5 and 6 of this form*, please sign and date below **and** get the checklist countersigned (see below).

Students must submit the authorised checklist along with their assessed work to the Module Convenor or Supervisor.

*Dissertation students **must** include the checklist, previously signed and authorised by their supervisor, as an appendix when they submit their dissertation proposal. Please keep one copy of this form for your personal records.*

By signing this form you are agreeing to work within the protocol which you have outlined and to abide by the University of Nottingham Ningbo's Code of Research Conduct and Research Ethics. If you make changes to your research protocol (such as changes to methods of data collection, the proposed sites of data collection, the means by which participants are accessed) which in turn would change your answers to any of the above questions then you **must** complete a new form and submit a copy to your supervisor/tutor. Once approved this should be lodged with the School Office.

Signed …… Date ……..

Staff Authorisation (by supervisor for dissertations; module convenor or staff member for other research projects)

Having reviewed the ethical issues arising from the proposed research:

☐ I consider this to be a minimum-risk study and confirm the research can go ahead as planned.

☐ I have requested that changes be made to the research protocol. (The researcher must complete and submit a revised form which integrates these changes.)

☐ This project must be referred on to the Research Ethics Panel for more detailed ethical scrutiny. (Please forward a hard copy to the School's Research Ethics Officer.)

Signed …… Date ……

Designation ……

Please note: **any** research protocols lodged with the School Office may be subject to review by the School's Research Ethics Panel.

Part B

If you ticked any of the shaded boxes in sections 3, 4, 5 or 6 of this form, then you must complete SECTION 7b (below). You must then discuss all ethical issues arising, record the outcome and have this form countersigned by a member of staff (see below).

SECTION 7b: FURTHER INFORMATION & JUSTIFICATION OF METHODOLOGY

One box should be completed for **each** shaded box ticked in sections 3, 4, 5 or 6 of this form.

Section5 :

Ethical issue: The research involves **visual methods** (i.e., camera input) where individuals may be identified. Rationale for chosen methodology and/or how ethical issue is to be addressed: While visual data will be captured via camera feeds, no identifiable information will be stored. The computer vision system will only process demographic characteristics (e.g., age, gender, ethnicity) in real time, and no visual record will be retained in a database. Participants will be informed of the data collection process through clear signage and will have the option to opt-out or provide feedback via a questionnaire. All data collected will be anonymized to protect privacy and will adhere to strict ethical guidelines related to visual data.

Supervisor's/staff member's response (including whether ethical issue has been satisfactorily addressed):

The ethical issue is satisfactorily addressed. No privacy information will be stored.

(Please continue on separate sheets if required)

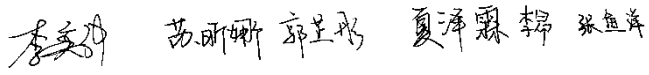
Student's declaration of ethical research

If you ticked any of the shaded boxes *in Sections 3, 4, 5 and 6 of this form*, you should have completed Section 7b after discussion of the ethical issues with your module convenor or supervisor. Then please sign and date below **and** get the checklist countersigned by your module convenor or supervisor (see below).

Students must submit the authorised checklist, along with their work to be assessed, to the Faculty Office.

Dissertation students **must** include the checklist, previously signed and authorised by their supervisor, as an appendix when they submit their dissertation proposal. Please keep one copy of this form for your personal records.

By signing this form you are agreeing to work within the protocol which you have outlined and to abide by the University of Nottingham's Code of Research Conduct and Research Ethics. If you make changes to your research protocol (such as changes to methods of data collection, the proposed sites of data collection, the means by which participants are accessed) which in turn would change your answers to any of the above questions then you **must** complete a new form and submit a copy to your supervisor/tutor. Once approved this should be lodged with the School Office.

Signed  Date 23 October 2024

Staff Authorisation (by supervisor for dissertations; module convenor or staff member for other research projects)

This section **must** be completed in **all** cases where additional information has been provided in Section 7b. It is also helpful for the project supervisor to comment on the further information provided by the student in Section 7b.

Please note that **all projects involving vulnerable groups or the study of illegal activities** should be referred on to the School Research Ethics Panel.

Having reviewed the ethical issues arising from the proposed research:

☒ I consider this to be a minimum risk study and confirm the research can go ahead as planned.

☐ I have requested that changes be made to the research protocol. (The researcher must complete and submit a revised form which integrates these changes.)

☐ This project must be referred on to the Research Ethics Panel for more detailed ethical scrutiny. (Please forward a hard copy to the School's Research Ethics Officer.)

Signed ……  …… Date …23 October 2024…

Designation ……Supervisor……

Please note: **any** research protocols lodged with the School Office may be subject to review by the School's Research Ethics Panel.

The Unit Research Ethics Panel

☐ agrees that the research can go ahead as planned

☐ requests further information on the research protocol (see details below)

☐ requests amendments to the research protocol (see details below)

UNIT REO…… Date ……