

**School of Engineering Research Ethics Committee
Application Form**

Name	Changhong Li
School	Trinity College Dublin School of Engineering
Position	Postgraduate Student
Supervisor (if applicable)	Shreejith Shanker
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Project title	HeyDude
Start Date	December 26, 2023
End Date	December 26, 2024
Funder (if applicable)	N/A

Date of Submission	January 3, 2024
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Please read through the checklist below and tick the relevant boxes provided to ensure that each required item has been included or considered with your application. Please put 'N/A' against items that are not relevant to your application. Applications submitted without a completed checklist will not be reviewed by the Committee.

This form is for Level 1 applications. Applications involving vulnerable groups, minors, and/or healthcare patients should be addressed to a Level 2 committee. Please see the School website for further details.

Please note deadlines for submission of applications and outcome dates published on the School webpage when considering the start date of your project.

Please submit the completed form and any supplementary documents to mary.kerrigan@tcd.ie.

Application Checklist	X
No vulnerable participants are included in the study, and no hospital or clinical procedures are involved.	X
No minors are participants in the study	X
Letter of permission provided from the organisation/industry/institution hosting the study, or holding relevant data.	X
Application form (Section 20) states that data will be stored for as long as is necessary for the purposes of the research project, in line with Trinity College's data retention policy.	X
Participant and study Information/Debriefing sheet Consent Form <ul style="list-style-type: none"> • The Information Sheet should contain Trinity College work contact details (phone number, e-mail and postal address) of applicant and supervisor (if applicable). • The Consent Form must include space for participants to both print and sign their name. 	X
Provision of any advertising material that will be used for the purpose of recruiting participants (e.g., posters)	X
Fully Completed Application for Approval (see below)	X

School of Engineering Research Ethics Committee

Application for approval

Study Design & Methods

1. Specify the aim(s) of the research
This research aims to build up a hands-free speaker control with users' voice called The Box. The Box connects to the Hey Dude Voice Service to supply multimedia services. In the research, the developers need to testify the algorithm with a variety of different voices, running of experiments in which audio recordings of test subject's speech. The audio are used to test the accuracy of the machine learning algorithm and improve the experience of the users.
2. Describe the research design and briefly outline the methods that will be used
<p>Research Design: The research is an observational study, and researchers should evaluate the performance of the cloud software, and user experience, ensure the ethical compliance of the software services. The data of the research is from the speech of the students and staff in the university. The developers should evaluate the performance of the software with different scenarios and mark the product with its accuracy, speed, ethical compliance, etc.</p> <p>Methods: The research methods involve Data Collection, Ethical Considerations, data analysis and results reporting, etc.</p>
3. Describe the procedures that participants will encounter during the study. This account should convey, in straightforward language, exactly what will happen to participants in the study.
<p>Students or employees participating in the trial as voice samples will be asked to record multiple voice audio commands for different scenarios to serve as training datasets.</p> <p>Project researchers will use these data samples to train the model and evaluate its performance and compliance.</p>
4. How will reliability and validity be assessed. If not known, what steps will be taken to establish reliability and validity?
<p>By increasing the number of data samples, such as increasing the number of volunteers, the number of sampled audios, and the types of target results, the reliability and validity of the software effects and research results can be improved. At the same time, data sampling can also be carried out in different environments and the noise of the data can be changed, so that the model can respond effectively in a variety of environments.</p>

5. Clearly state what data will be collected, and how will the data collected be used in the analysis. Please justify why you have chosen to collect this type of data for this research."
<p>In this research scenario we will collect the following data types. The application methods and reasons for selecting these data are as follows:</p> <ol style="list-style-type: none"> 1. Original audio recording, used for original recording and analysis of audio data, as the original data source, and through this data analysis, other relevant characteristic information of the data record can be obtained. 2. The approximate age range of users. Based on this approximate age range, it is used to assist in understanding the semantic preferences of users in this age range, to make more accurate responses. 3. The user's gender, determine the meaning of the user's specific instructions based on the user's gender, and provide customized responses. 4. The user's accent, determine the general region or range where the user is located, and determine the preferences and characteristics of users in that region. <p>By analysing the above data, the model is tuned so that the model can make more accurate modelling and responses to specific application scenarios.</p>

Access & Recruitment of Participants

6. Will human participants be involved in the project?
Yes, the volunteers will participate in audio collection.
7. How many participants are required?
The more, the better. The larger the amount of data, the more the model can adapt to the business models of different users and different scenarios. However, considering the number of people on campus, the number is between 200-500. Insufficient data can be expanded using relevant technologies.
8. Please identify the expected composition of the participant group, considering age, gender, background, employment status etc where applicable.
<p>Considering that the main user groups we collect information are students and employees on campus, the main characteristics of the information are as follows:</p> <ol style="list-style-type: none"> 1. Age: 18-50 years old 2. Gender: Try to ensure a balanced data sample, with a male to female ratio of 1:1 3. Background and employment status: Mainly university students and university faculty members
9. State how participants will be recruited. If participants will be recruited via another institution or organisation, please attach a letter confirming cooperation.
We recruit volunteers in the following ways:

<p>1. Post posters in public areas of relevant colleges and schools to recruit volunteers.</p> <p>2. Establish relevant project websites for online promotion and personnel recruitment.</p> <p>3. Combined with some related courses and projects, recommend relevant faculty and students to participate in this project.</p> <p>4. Combine with the school's large-scale activities to promote the project and recruit volunteers.</p>	
<p>10. Specify how participants will be informed of the nature of the study (e.g., aim, rationale) and what participation entails (attach copy of Information Sheet, Briefing or Debriefing Forms). This should consider information provided to participants before, during and after the participation.</p>	
<p>In the early stages of volunteer recruitment, we will provide general information about the project, the research purpose of the project, and an overview of related data usage.</p> <p>After volunteers clarify their willingness to participate, we will provide detailed non-confidential project information and data usage regulations for participants to confirm. We will only use data with the participant's knowledge and consent.</p> <p>After completing data collection, we will ensure the security of their data, their data will only be used for this research and allow volunteers to withdraw their data authorization.</p>	<p>Mark to confirm attachment of Information Sheet and/or forms</p> <div style="border: 1px solid black; width: 40px; height: 40px; margin: 10px auto; text-align: center; line-height: 40px;">X</div>
<p>11. Specify how informed consent will be obtained (attach copy of consent form).</p>	
<p>At the same time as data collection and registration, volunteers will obtain and sign an informed consent form.</p>	<p>Mark to confirm attachment of Consent form</p> <div style="border: 1px solid black; width: 40px; height: 40px; margin: 10px auto; text-align: center; line-height: 40px;">X</div>
<p>12. If observational research is to be undertaken without prior consent, describe the situation and how privacy, confidentiality and dignity will be preserved.</p>	
<p>First, we will try our best to ensure that the data we obtain is obtained with prior consent as much as possible, and this information will be marked in the database as a field of the data.</p> <p>For data we obtain without prior consent under special circumstances, if we plan to use this data, we will additionally contact the user for data authorization, and pay additional attention to the authorization status and privacy protection of this data when using the data.</p>	

Fieldwork/Data Collection/ Testing

13. Where will the study take place? Specify where participants will be tested/interviewed
<p>The study was conducted on campus.</p> <p>We will build relevant websites and databases. Users can choose to conduct data sampling online or offline. The location can be selected in a specific laboratory sampling environment, or any location that volunteers wish.</p> <p>We hope that volunteers will input the sampling environment as a separate data sample, which will help the adaptation and learning of environmental scenes in later model recognition.</p>
14. How long (per participant) will testing / interviewing take? Will participants be offered a break? [if testing period extends beyond one hour, then a break must be offered]
<p>Each piece of data collection will take about five minutes to distinguish different conversations and application scenarios.</p> <p>A three-minute break will be provided in the middle of each five-minute period of data collection to ensure that volunteers can adjust their thoughts and status.</p>
15. Will participants be paid? If so, what is the rate of payment?
<p>No, this is an unpaid volunteer activity on campus with a small reward associated with electronic credentials if necessary.</p>
16. Specify how confidentiality of participants will be assured.
<p>All data collection will be conducted individually to ensure participant privacy</p> <p>All data storage will be encrypted to ensure data security</p> <p>All relevant questions will be as general as possible and will not involve the user's personal privacy and characteristic information.</p>
17. Can participants withdraw from the study at any point without penalty? If so, how will this information be communicated to participants?
<p>Participants can withdraw from the study and revoke data authorization at any time, but revocation of data authorization will occur within a few business days.</p> <p>We will clarify their right to withdraw from the research at any time in the relevant terms signed in the early stage.</p>

Assessment of Risk and Risk Management

18. Specify whether the study involves any risk of harm to the participants or the environment. If so, justify why it is necessary and how it will be minimised.
<p>This research may address situations where user information has been improperly used as a result of a data breach.</p> <p>We will try our best to ensure the security, reliability and de-personalization of data</p>

19. Specify any requirements for continued engagement with participants following completion of the project.
No, no follow-up and other related interactions from participants are required after project completion.

Data Storage & Management

Please note that data collected by M-level students should not be stored on personal laptops, but on an appropriate cloud service managed by the project supervisor.

20. Specify the measures the study will adopt for storing data. Please see https://www.tcd.ie/info_compliance/index.php for guidelines.	
The project team will apply for the school's dedicated information storage database service and store relevant information in the designated database and establish relevant data authorization management plans. Do not allow individual members of the project to store data on personal end devices.	
21. Please mark to confirm that all personal data will be kept for as long as is necessary to conduct the research, and no longer in line with Trinity's data storage policy?	<div style="border: 1px solid black; width: 40px; height: 40px; display: flex; align-items: center; justify-content: center; margin: 0 auto;">X</div>

GDPR

22. Does the study involve collecting, using, accessing or sharing personal data¹?

Yes

X

 No

If No, please go to end of form declaration

If Yes, please list all categories of personal data.

¹ Personal data is information which can identify a person. In particular: a name, address, email, telephone number, an identification number, location data, an online identifier, an IP address, a code key linking back to identifiable data etc. Please note that pseudonymised data is personal data under GDPR.

Type of Data	Justification: Explain why you need the data	Processing Activity: List: data formats and storage	Identifiable, coded, or anonymised?
Age range	for data analysis	String, database	anonymized
gender	for data analysis	String, database	anonymized
accent	for data analysis	String, database	anonymized
authorized	for data analysis	String, database	anonymized
command	for data analysis	String, database	anonymized

23. Does the study involve collecting, using, accessing or sharing sensitive data²

Yes ☒ No ☐

If Yes, please list all categories of the sensitive data collected.

If No, please go to question 24

Type of Data	Justification: Explain why you need the data	Processing Activity: List: data formats and storage	Identifiable, coded, or anonymised?
original voice	for data analysis	In encrypted format, String, database, File path, database, file system	anonymized

24. Who determines how and why the personal and/or sensitive data is used?

² Sensitive personal data means: personal data revealing racial and ethnic origin, political opinions, religious or ideological convictions, trade union membership, criminal convictions and offences, genetic, biometric (photos, videos, audio etc.) data concerning physical or mental well-being, information relating to education, professional training employment and career history, questionnaires, Information relating to the family of the individual and the individual's lifestyle and social circumstances.

(Data Controller³ or Joint Data Controllers)

Provide Details:
Data controller: TCD

25. Will the personal and/or sensitive personal data be shared with any third parties⁴?

If Yes, provide details including information on the contractual arrangements in place. This list should include all Data Processing Agreements with external laboratories, Cloud-based Solutions Agreements etc. and any and Data Sharing Agreements with Collaborators.

Please contact researchDPO@tcd.ie if you need assistance with Agreements and/or for any transfer outside EEA (including England, Wales, Scotland or Northern Ireland).

Provide Details:
No, the data will not be shared with any third parties.

26. What steps will you take to protect the confidentiality of personal or sensitive personal data?

Please see checklist on secure storage available [here](#).

The data will be stored in a designated controlled database, which will have log and permission access control functions.
Key sensitive data such as names and audio data will be encrypted and replaced with pseudonyms.
The user's data authorization information will be stored separately as a field to determine whether the data is authorized and available.

27. What is the retention period for the personal data and how will this be implemented?

Please see good [research practice guide](#) for guidance on retention of data

The data will be retained for the duration of the research project plus 7 years (10 years in total) to allow for publication. The data will be retained in pseudonymised form.

28. Will the personal data be fully anonymised or destroyed after it is no longer necessary?

Yes, they will be destroyed if it is no longer necessary.

³ Employees and students of TCD are not data controllers. TCD is the data controller for the institution. However, if other institutes jointly decide how and why the data will be used, they should also be noted as controllers here.

⁴ Third parties could be collaborators (institutes/industry) or service providers (transcribers, cloud storage etc.)

3.8 How will you inform participants of their rights under GDPR⁵:

We will inform volunteers of their rights and interests by citing relevant provisions in the participation agreement before data collection.

Please note that the DPO's contact details must be included on any information leaflet or privacy notice if you are using personal data for your research.

Email: dataprotection@tcd.ie

Post:

Data Protection Officer
Secretary's Office,
Trinity College Dublin,
Dublin 2,
Ireland

Please use the template information leaflet available here as the basis of your privacy/information leaflet.

Declarations

Applicant

By submitting this application, I confirm that I have read and will abide by the School of Engineering Ethical Guidelines and the Trinity College Dublin Policy on Good Research Practice.

Print name of applicant _____ **Changhong Li** _____

Supervisor (if applicable)

I have read through and approved the contents of this application to the Research Ethics Committee.

(For Masters Students) I confirm that I will retain project data on an approved cloud service that I will manage for the required period, being at least until 13 months following completion of the court of examiners.

Print name of Supervisor _____ **Shreejith Shanker** _____

⁵ Under GDPR, these include:

- right of access;
- right to rectification;
- right to erasure;
- right to object to processing based on legitimate or public interest;
- right to data portability;
- right to object to profiling or making decisions about individuals by automated means?

Please submit the completed form and any supplementary documents to mary.kerrigan@tcd.ie.