

For office use only		
Assigned EBIT tracking number		EBIT/      /
Date received		

**UNIVERSITY OF PRETORIA**  
**FACULTY OF ENGINEERING, BUILT ENVIRONMENT AND INFORMATION TECHNOLOGY**  
**FACULTY COMMITTEE FOR RESEARCH ETHICS AND INTEGRITY**  
**(EBIT Ethics Committee)**

**APPLICATION FOR APPROVAL OF A RESEARCH PROJECT**

**This application form must be read with the relevant UP regulations, as documented in the Code of Ethics for Scholarly Activities, and the Policy and Procedures for Responsible Research. By completing and submitting this form, you declare that you have read these two documents and understand the regulations.**

**Important: Each item must be completed.**

**Complete the form in your word processor. Forms completed in handwriting are not accepted.**

**Where applicable, underline the correct answer (e.g. Yes or No).**

**1. RESEARCHER DETAILS:** (Please include your Supervisor details in this section if you are a student)

Applicant details:		University of Pretoria supervisor details:	
Initials and surname:	W Bekker	Initials and surname:	D Ramotsoela
Title:	Mr	Title:	Mr
Email:	<a href="mailto:u15134092@tuks.co.za">u15134092@tuks.co.za</a>	Email:	<a href="mailto:daniel.ramotsoela@up.ac.za">daniel.ramotsoela@up.ac.za</a>
Phone:	+27 (0) 76 864-0731	Phone:	(012) 420 3738
Employee/student number:	15134092	Employee number:	10350749
Department:	Electrical, Electronic and Computer engineering	Department:	Electrical, Electronic and Computer engineering
Are you a student (yes or no):	yes		

**2. RESEARCH PROJECT TITLE** (use a descriptive title)

A biometric authentication system for laptops using speaker recognition

### 3. RESEARCH PROJECT DETAILS

**3.1 Provide a complete but concise description** (no more than 5000 characters, including spaces) of the study objectives and study design, so that the relevant ethical aspects can be identified.

- From this, please identify the aspects clearly that you believe require ethics clearance.
- Please note: do NOT submit a complete research proposal. The Ethics Committee will not consider this, but will only consider the documents required for submission of an application.

The study that will be carried out involves using participants' voices to unlock a laptop. A system will be designed that records a set of predefined sentences designed to contain many different sounds in the English language. The participant's age, gender and home language will then be recorded to test the system's resilience to differences posed by gender, age, and accent in human voices.

The voice clips will be used to train a model used for user identification.

The model comprised of a mathematical feature extraction algorithm that attempts to find unique features in a user's voice. The data obtained from this process is used as a space to perform clustering on, this is done for each sentence. The clustered model is then stored as a reference to be compared to an unknown user.

When the system is tested a user is recorded by saying an unknown English phrase, this phrase could be anything. Feature extraction and clustering are then performed on the vocal sample and compared to the database of known users to estimate whether it is known or unknown and if known, which user it is.

The system aims to be an alternative to the already popular form of biometric authentication, fingerprints. It could be used as an alternative, or in conjunction with widely used methods.

#### 3.2 Will a research questionnaire/survey be used?

- If Yes, please answer the next question. If No, ignore the next question.
- Please submit your questionnaire, survey questions or interview questions with your application. This will be a separate file that should be submitted as a pdf file, using this filename format: Questionnaire.pdf or Survey.pdf

**Yes**

**No**

#### 3.2.1 Does your questionnaire/survey include any personal questions?

(including ANY of the following: name, address, email address, any other information by which a respondent can be identified, gender, age, race, income, medical status)?

**Yes**

**No**

#### 3.3 Are employees of a firm, organisation or institution questioned as informant in this study?

- If Yes, please submit letter(s) of permission from this entity to carry out this study. It should be clear that the person giving permission is authorised to do so and should be on a company letterhead and should include the date and that person's signature.
- Where required, your application cannot be considered without this permission letter.
- This letter should be submitted as a pdf file, using this filename format: CompanyPermissionLetter.pdf

**Yes**

**No**

#### 3.4 Will you be surveying or questioning UP students or UP personnel in this study?

- If Yes, you need to submit a letter or email from the Dean that provides permission for you to include UP personnel or students as participants in your study.
- Where this is required, your application cannot be considered without this permission letter.
- This letter should be submitted as a pdf file, using this filename format: DeanPermissionLetter.pdf

**Yes**

**No**

4. RESEARCH PARTICIPANTS		
<b>Does the project involve people as participants, either individually or in groups?</b> If Yes, please answer questions 4.1 to 4.7. If No, continue to section 5.	<u>Yes</u>	No
<b>4.1 Does the study involve people as informants, or does it involve people as research subjects?</b> <i><b>Informants</b></i> are people of whom you require an opinion, e.g. people that are interviewed or that take part in a survey. <i><b>Research subjects</b></i> are people that actively take part in research, e.g. where biological measurements are made (e.g. heart rate) or where people take part in behavioural tasks (e.g. listening tasks)	<u>Informant</u> <u>s</u>	<b>Subject</b> <b>s</b>
<b>4.2 Describe possible safety and health implications that participation in the project may pose.</b>  The study does not pose physical safety or health implication. It does however pose privacy concerns as the voices, age, gender and home language of participants are recorded.		
<b>4.3 What is the expected duration of participation of people in the project?</b>  The capturing of the data will take about 5 minutes. The data is stored safely for the remainder of the semester until the conclusion of the exam.		
<b>4.4 Describe the manner in which confidential information will be handled and in which confidentiality will be assured.</b>  Data will be used in an abstract manner to test the system's resilience against gender, age and accent differences. The age, gender and home language of the participants will not be actively used in the system, but rather used in experiments and the results expressed in the final report to show resilience. Pseudo-names will be used in the authentication system.		
<b>4.5 Please explain how and where data will be stored. It should be clear that data will be appropriately protected (e.g. password protected in encrypted files).</b>  The voices of participants will be stored on an Odroid C2 device that system will be executed on. The data will be password protected and only be accessible by the program.  The age, gender and home language of the participants will be stored in an encrypted and password protected device.		
<b>4.6 Is remuneration offered to subjects for participation? If yes, please expand.</b>  Remuneration is not offered.		

<b>4.7 INFORMED CONSENT/ASSENT</b> Informed consent is a requirement for <i>all</i> studies. All participants need to provide individual informed consent, which the researcher should keep on record. An example for an informed consent form appears on the website, but this should be adapted to be very specific about your study and what you will require of participants.  Please submit your informed consent form (an example of the form that you will use) with your application. This should be submitted as a pdf file, using this filename format: InformedConsent.pdf
<b>4.7.1. Please describe what you will do to obtain informed consent/assent from your participants (or their caregivers in the case of underage participants).</b>  Participants will be given the informed consent form and explained the risks and usage of their data as well as the responsibility of the researcher. When the form is signed by both parties and witness, consent will be assumed.

#### 4.7.2 Detail the measures you will take to ensure that participation is voluntary.

The role of the participants in the study will be detailed and explained, along with an brief overview of the project and the goal of the project. The possible risks will be explained as well as the measures taken to protect the identity of the participants and the data gathered from them.

## 5. ENVIRONMENTAL IMPACT and HAZARDOUS MATERIALS

### 5.1 Does the project have a potentially detrimental environmental impact, or are hazardous materials used in the project?

**Yes**

**No**

- If Yes, you will need to submit a letter of approval from the Department of Facilities and services, Occupational Health and Safety division, before the Ethics Committee can consider your application.
- If section 5 (this section) is the only aspect of your project for which you require clearance from the Ethics Committee (i.e. no people or animals are included in your study), you should not apply to the Ethics Committee, but should apply for clearance directly to the Occupational Health and Safety division.
- If No, continue to section 6.

## 6. DISSEMINATION OF DATA

### 6.1 How and where will your results be published and/or applied?

The results will be analysed and compiled in a technical report of the examination of the project. The results will also be used in a demonstration during examination.

## 7. DECLARATION (Tick the relevant boxes)

✓	I accept and will adhere to all stipulations pertaining to ethically sound research as locally, nationally and internationally established.
✓	I will conduct the study as specified in the application and will be principally responsible for all matters related to the research.
✓	I shall communicate all changes to the application or any other document before any such is executed in my research, to obtain the necessary permissions from the Ethics Committee.
✓	I will not exceed the terms of reference of the research application or any other documents submitted to the Ethics Committee.
✓	I confirm that I'm not seeking ethics clearance for research that has already been carried out.
✓	I affirm that all relevant information has been provided and that all statements made are correct.
✓	I have familiarised myself with the University of Pretoria's policy regarding plagiarism <a href="http://www.aibrary.up.ac.za/plagiarism/index.htm">http://www.aibrary.up.ac.za/plagiarism/index.htm</a> . Plagiarism is regarded as a serious violation and may lead to suspension from the University.

Please submit the completed Declaration By The Researcher form with your application.

Please submit this as a pdf file with this filename format: Declaration.pdf

## 8. SUBMISSION CHECKLIST

Each item to be submitted should be submitted as a separate pdf file, using the naming convention given earlier in this document or below.

<b>8.1 Have you submitted confirmation that the research proposal has been approved?</b> Please submit as a pdf file with this filename format: Confirmation.pdf	<u><b>Yes</b></u>	<b>No</b>	
<b>8.2 Have you submitted your application form (this form)?</b> Please submit as a pdf file with this filename format: ApplicationForm.pdf	<u><b>Yes</b></u>	<b>No</b>	
<b>8.3 Have you submitted your survey questions, questionnaire or interview questions (where applicable)?</b> Please submit as a pdf file with this filename format: Questionnaire.pdf	<u><b>Yes</b></u>	<b>No</b>	<b>N/A</b>
<b>8.4 Have you submitted the <i>Declaration by the researcher</i> form?</b> Please submit as a pdf file with this filename format: Declaration.pdf	<u><b>Yes</b></u>	<b>No</b>	
<b>8.5 Have you submitted the <i>Informed consent form</i>?</b> Please submit as a pdf file with this filename format: InformedConsent.pdf	<u><b>Yes</b></u>	<b>No</b>	
<b>8.6 Have you submitted permission letters from firms, institutions or organisations where required?</b> Please submit as a pdf file with this filename format: CompanyPermission.pdf	<b>Yes</b>	<b>No</b>	<u><b>N/A</b></u>
<b>8.7 Have you submitted a permission letter from the Dean where required?</b> Please submit as a pdf file with this filename format: DeanPermission.pdf	<u><b>Yes</b></u>	<b>No</b>	<b>N/A</b>