L-Università ta' Malta

# Research Ethics and Data Protection Form

University of Malta staff, students, or anyone else planning to carry out research under the auspices of the University, must complete this form. The UM may also consider requests for ethics and data protection review by External Applicants.

Ahead of completing this online form, please read carefully the University of Malta Research Code of Practice and the University of Malta Research Ethics Review Procedures. Any breach of the Research Code of Practice or untruthful replies in this form will be considered a serious disciplinary matter. It is advisable to download a full digital version of the form to familiarise yourself with its contents (https://www.um.edu.mt/research/ethics/resources/umdocuments/). You are also advised to refer to the FAQs (https://www.um.edu.mt/research/ethics/faqs).

## Part 1: Applicant and Project Details

### Applicant Details

**Name:** Mark

**Surname:** Dingli

**Email:** mark.dingli.21@um.edu.mt

**Applicant Status:** Student

**Please indicate if you form part of a Faculty, Institute, School or Centre:** * Faculty of Information & Communication Technology

**Department:** * Department of Artificial Intelligence

**Principal Supervisor's Name:** * Mr.Kristian Guillaumier

**Principal Supervisor's Email:** * kristian.guillaumier@um.edu.mt

**Co-Supervisor's Name:**

**Study Unit Code:** * ICT3909

**Study Unit Name:** * Final Year Project in Artificial Intelligence

**Student Number:** * 20703H

### Project Details

**Title of Research Project:** * AI-Driven Marine Conservation: Predictive Modeling, 3D Underwater Modeling and VR Experiences

**Project description, including research question/statement and method, in brief:** *

The central aim of this project is to develop a system that leverages the capabilities of artificial intelligence (AI) to transform trash debris cleanup, coral preservation and diving. The platform will consist of AI-aided trash debris prediction, simplified 3D models and immersive VR experiences.

Artificial Intelligence holds vast potential to improve the domains of marine exploration, environmental cleanup, and coral conservation by introducing levels of precision, engagement, and sustainability. However, applications fully harnessing AI's capabilities in these fields are notably few. This project aims to bridge this void, establishing itself as an AI-powered solution for marine sustainability.

The project will concentrate on the following areas:

Predictive Trash Debris Tracking: Building an AI model to predict the presence and movement of trash debris at bays and potential dive sites around Gozo. This model will use previously collected weather and sea data points to offer accurate forecasts. The website will also allow users to log in and report debris, notifying the Dive Centre, thus working hand in hand to aid efficient planning of cleanup activities and marine conservation.

Simplified 3D Underwater Modeling: Using AI techniques like computer vision to create straightforward but effective 3D models of dive sites and coral life. The resulting 3D models aim to give users a comprehensive understanding of the underwater terrain and marine life, facilitating cleanup planning and site selection.

Immersive VR Diving and Cleanup Experiences: Utilizing the power of virtual reality (VR) to design engaging, realistic simulations of dive sites. This component aims to allow users to virtually scout dive sites to familiarize themselves with the terrain and potential debris, thus enhancing the planning and effectiveness of actual cleanup dives. This will enable proactive preservation efforts, ensuring that diving and cleanup activities are conducted in a manner that safeguards these fragile ecosystems.

A website will be implemented to serve as a centralized hub hosting all AI-driven services. It will deliver real-time updates from the predictive AI model, showcase interactive 3D underwater models, provide access to immersive VR diving experiences and will have a variaty of information for divers interested in exploring Gozo's beautiful waters. With a user-friendly design, the platform is geared to facilitate collaborative marine conservation by offering comprehensive insights, enhancing underwater exploration experiences, fostering an engaged community and promoting proactive sustainability efforts.

By integrating these AI-enhanced features, the project aims to create a comprehensive, user-friendly website that revolutionizes marine cleanup and conservation efforts. It seeks to elevate safety standards, improve cleanup planning, enhance underwater experiences, and contribute to healthier, sustainable marine life, thus striking a balance between exploration and preservation.

**Will project involve collection of primary data from human participants?** No

**Will project involve collection of primary data from animals?** No

## Part 2: Self Assessment and Relevant Details

### Human Participants

**1. Risk of harm to participants:** No / N.A.

**2. Physical intervention:** No / N.A.

**3. Vulnerable participants:** No / N.A.

**4. Identifiable participants:** No / N.A.

**5. Special Categories of Personal Data (SCPD):** No / N.A.

**6. Human tissue/samples:** No / N.A.

**7. Withheld info assent/consent:** No / N.A.

**8. 'opt-out' recruitment:** No / N.A.

**9. Deception in data generation:** No / N.A.

**10. Incidental findings:** No / N.A.

### Unpublished secondary data

**11. Human:** No / N.A.

**12. Animal:** No / N.A.

**13. No written permission:** No / N.A.

### Animals

**14. Live animals, lasting harm:** No / N.A.

**15. Live animals, harm:** No / N.A.

**16. Source of dead animals, illegal:** No / N.A.

### General Considerations

**17. Cooperating institution:** No / N.A.

**18. Risk to researcher/s:** No / N.A.

**19. Risk to environment:** No / N.A.

**20. Commercial sensitivity:** No / N.A.

### Other Potential Risks

**21. Other potential risks:** No / N.A.

**22. Official statement: Do you require an official statement from the F/REC that this submission has abided by the UM's REDP procedures?**
No / N.A.

## Part 3: Submission

**Which F/REC are you submitting to? *** Faculty of Information & Communication Technology

**Attachments:**

- ☐ Information and/or recruitment letter*
- ☐ Consent forms (adult participants)*
- ☐ Consent forms for legally responsible parents/guardians, in case of minors and/or adults unable to give consent*
- ☐ Assent forms in case of minors and/or adults unable to give consent*
- ☐ Data collection tools (interview questions, questionnaire etc.)
- ☐ Data Management Plan
- ☐ Data controller permission in case of use of unpublished secondary data
- ☐ Licence/permission to use research tools (e.g. constructs/tests)
- ☐ Any permits required for import or export of materials or data
- ☐ Letter granting institutional approval for access to participants
- ☐ Institutional approval for access to data
- ☐ Letter granting institutional approval from person directly responsible for participants
- ☐ Other

**Please feel free to add a cover note or any remarks to F/REC**

**Declarations: ***

- ☑ I hereby confirm having read the University of Malta Research Code of Practice and the University of Malta Research Ethics Review Procedures.
- ☑ I hereby confirm that the answers to the questions above reflect the contents of the research proposal and that the information provided above is truthful.
- ☑ I hereby give consent to the University Research Ethics Committee to process my personal data for the purpose of evaluating my request, audit and other matters related to this application. I understand that I have a right of access to my personal data and to obtain the rectification, erasure or restriction of processing in accordance with data protection law and in particular the General Data Protection Regulation (EU 2016/679, repealing Directive 95/46/EC) and national legislation that implements and further specifies the relevant provisions of said Regulation.

**Applicant Signature: *** Mark Dingli

**Date of Submission: *** 05/07/2023

**If applicable: Date collection start date**

# Administration

**REDP Application ID** ICT-2023-00203

**Current Status** Draft

*If a submitted application needs to be amended, it can be withdrawn, edited, and resubmitted, and it will retain the same reference number. There is no need to submit a new application.*