

Physical Sciences Ethics Committee

CS Fast-Track Ethical Approval Form

How to Use This Form

You can make a copy of the form for editing through File > Make a copy. The copy then can be shared between the student and the advisor and collaboratively filled online. If you prefer to fill the form offline, the file can be downloaded through File > Download in a variety of formats including Microsoft Word (.docx) and OpenDocument Format (.odt). Finalised forms can then be exported as PDF through File > Download and submitted following the guidance on submission.

Notes before You Start

It is strongly recommended that you consult the guidance on the [CS Ethical Approval webpage](#). Non-compliance with the available guidance will lead to delays in the approval process.

This fast-track form is for **taught students** only. The form needs to be filled by the student and their advisor (or module leader if the project is a module assignment).

Research students and staff must complete the Full Ethical Approval Form found in the [CS Ethical Approval webpage](#).

Students: You need to discuss the ethical considerations of your project with your project advisor (or module leader if the project is a module assignment) and, if necessary, fill in a full ethics form to be submitted to the Physical Sciences Ethics Committee.

Advisors (or Module Leaders): You need to review and approve the completed form. Please ensure you are familiar with the University's [Code of practice and principles for good ethical governance](#) to guide your student effectively. Please seek guidance from the Departmental Ethics Officer(s) if you are uncertain about any ethical issue arising from this application.

Section 1. Potential Ethical Issues

Does your project involve any of the following? Please mark Yes or No for **all** issues.

No.	Issue	Yes	No
1.1	Human participants (adults or children)		✓
1.2	Human data (e.g. data collected through surveys and questionnaires on issues such as lifestyle, housing and working environments, and attitudes and preferences, and datasets including human data)	✓	
1.3	Applications that could potentially involve unethical practice, including potential dual-use applications (e.g. projects involving tools or data that can be used to attack systems)		✓
1.4	Funding sources or collaboration with potential to adversely affect existing relationships or bring the University or Department into disrepute (e.g. projects related to gambling, dark market, etc.)		✓
1.5	Restrictions on dissemination (e.g. not being allowed to publish certain datasets or results)		✓
1.6	Military or defence context		✓
1.7	Overseas countries under regimes with poor human rights record or identified as dangerous by the Foreign & Commonwealth Office		✓
1.8	Human material (e.g. tissue or fluid samples), vertebrates, especially mammals and birds, or any other organisms not previously mentioned		✓

If you answered **No** to all the above, you do not need ethical approval, so you do not need to continue filling in this form and you do not need to submit it for approval.

If you answered **Yes** to any of the above, you must complete this Fast-Track Ethical Approval Form, get it signed off by your project advisor (or module leader), and submit it for approval to the Departmental Ethics Officers.

The rest of this form is designed to verify specific conditions. If certain conditions are not satisfied, the form will guide you to complete a Full Ethical Approval Application, to be approved by the Physical Science Ethics Committee.

Section 2. Project Information

Student Name	Tin Yuet Chung
Course Title	Master of Science in Computer Science with Artificial Intelligence
Project Advisor	Dr Majid Latifi
Project Title	Evaluating the Performance of State-of-the-Art ESG Domain-Specific Pre-Trained Large Language Models in Text Classification Against Existing Models and Traditional Machine Learning Techniques

Course Mode of Delivery:

<input type="checkbox"/>	On Campus	<input checked="" type="checkbox"/>	Online
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Project Type:

<input type="checkbox"/>	Undergraduate Project	<input checked="" type="checkbox"/>	Postgraduate Project
<input type="checkbox"/>	Undergraduate Module Assignment	<input type="checkbox"/>	Postgraduate Module Assignment
<input type="checkbox"/>	Other - Please specify:		

Project Description

2.1. Provide a clear statement of your research questions or your experimental hypotheses.

Research Question 1: Creating an ESG Large Language Model (LLM)
Question: How can we develop a pre-trained language model specifically for the Environmental, Social, and Governance (ESG) domain?

Focus:

- Using state-of-the-art LLM techniques
- Training on ESG-related data sources

Research Question 2: Evaluating Performance

Question: How does the performance of the newly developed

ESG LLM compare to existing models on ESG text classification tasks?

Focus:

- Comparing against other ESG domain-specific models
- Comparing against traditional machine learning baselines (SVM, XGBoost)
- Performance metrics (accuracy, precision, recall, F1-score, etc.)

2.2. Briefly explain what you are going to do in your study. Give sufficient detail that a non-expert in the subject can understand what you are proposing to do.

In my study, I propose to create a more effective tool for analyzing texts related to Environmental, Social, and Governance (ESG) criteria. ESG criteria are a set of standards for a company's operations that socially conscious investors use to screen potential investments. Analyzing these texts can be challenging due to the specific language and concepts involved.

My approach involves two main steps:

Pre-training on ESG-specific text: I start with a state-of-the-art language model called LLaMa-2. These models are like big brains trained on vast amounts of general text from books, websites, and articles. However, LLaMa-2 doesn't specialize in ESG topics right out of the box. To make it an ESG expert, I first 'teach' it by exposing it to a lot of texts specifically about environmental, social, and governance issues. This process is called pre-training. It's like giving the model a crash course in ESG before it tackles the real task.

Fine-tuning for classification: After my model has learned about ESG, I focus on teaching it a specific skill: classification. This means I will train it to read an ESG-related text and decide which category it belongs to. For example, it might classify texts as relating to 'environmental sustainability', 'social responsibility', or 'governance ethics'. To do this, I give it examples — texts that I already know the classification of — so it can learn from these examples. This step is called fine-tuning because I am sharpening its ability to perform this specific task.

By the end of this process, we aim to have a model that not only understands ESG concepts but can also accurately categorize ESG texts. This would be a valuable tool for businesses, investors, and researchers who need to sift through large volumes of text to make informed decisions based on ESG criteria.

I plan to compare our ESG-tuned model's performance with other models that have been trained in a similar domain-specific manner, as well as with more general-purpose models like Support Vector Machine and

XGBoost. These comparisons will help us understand if my approach indeed offers a better solution for classifying ESG texts.

Section 3. Informed Consent

If you do not have participants in your study, please mark the following and skip to Section 4.

✓	There are no participants in my study.
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If you have participants in your study, complete the following table.

If you answer **No** to any of the following, you must submit a Full Ethical Approval Form.

No.	Question	Yes	No	N/A
3.1	Will you inform the participants of the purpose of the study, the investigators, and any funding source?			
3.2	Will you describe the procedures and the data collected to participants in advance, so that they are informed about what to expect? Note: any personal or sensitive information, and any audio or video recording must be explained explicitly and in detail.			
3.3	Will you tell participants that their data will be treated with full confidentiality and that, if published, it will not be identifiable as theirs? Note: If there is a plan to publish data, e.g. direct quotations, on an individual basis (rather than in aggregate), the exact anonymisation method needs to be explained clearly.			
3.4	Will you inform participants of any possible risks of participation?			
3.5	Will you inform participants that their participation is voluntary, that they may withdraw from the research at any time (even after the data collection, for a reasonable and specified time period) and for any reason without any negative consequences, and how they can request withdrawal?			

3.6	Will you obtain and record explicit consent for participation?			
3.7	If the research is observational, will you obtain and record explicit consent to being observed?			
3.8	If the research involves audio or video recording, will you obtain and record explicit consent to being recorded?			
3.9	If there is a plan to publish data, e.g. direct quotations, on an individual basis, will you obtain and record explicit consent to such publication?			
3.10	If you wish to contact participants in the future, will you obtain and record explicit consent to being contacted with the contact method specified?			

If you answered **Yes** to any of the above, this must be explicit in your supporting documents, e.g. consent forms, information sheets, and questionnaires. You need to submit these supporting documents along with this form.

Section 4. Protocol Issues

If you answer **Yes** to any of the following, you must submit a Full Ethical Approval Form.

No.	Question	Yes	No	N/A
4.1	Is your study designed to be challenging or disturbing (physically or psychologically) for anyone including yourself?		✓	
4.2	Will you deliberately mislead your participants?		✓	
4.3	Does your study involve taking bodily samples?		✓	
4.4	Is your study physically or psychologically invasive?		✓	
4.5	Could the methodologies or findings of your study damage the reputation of the University of York?		✓	

4.6. If there are any obvious or inevitable adaptations of your research findings to ethically questionable aims, e.g. tools or data that can be used

to attack systems, please explain the measures you are putting in place to limit such adaptations.

No, there are no obvious or inevitable adaptations of my research findings to ethically questionable aims.

Section 5. Health and Safety

Please identify any risks to the participants and state any precautions you will take to ensure their physical and mental health and safety. If you believe there are no risks, please state why.

The outcome of the project, is to create fine-tuned pre-trained Large Language Model to help with classification tasks for ESG text, which does not harm physical and mental health and safety.

Section 6. Vulnerable Groups and Animals

If you answer **Yes** to any of the following, you must submit a Full Ethical Approval Form.

If your participants are **patients**, in addition to the Full Ethical Application you must follow the Guidelines for Ethical Approval of NHS Projects.

If your project involves any vulnerable group, you may also need to obtain satisfactory Disclosure and Barring Service (DBS) clearance (or equivalent for overseas students).

No.	Question	Yes	No	N/A
6.1	Does your project involve working with animals?		✓	
6.2	Does your project involve any of the following vulnerable groups?		✓	
	● Children under 18		✓	
	● People with learning difficulties		✓	
	● People who are unconscious or severely ill		✓	
	● Patients, e.g. NHS patients		✓	

	<ul style="list-style-type: none"> Other vulnerable groups – specify below <div style="border: 1px solid black; height: 60px; width: 100%; margin-top: 10px;"></div>		✓	
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Section 7. Data Protection

If you answer **No** to any of the following, you must submit a Full Ethical Approval Form.

No	Question	Yes	No	N/A
7.1	Any personal or sensitive data will be stored in password protected folders on computers controlled by the University or an approved partner.			✓
7.2	Any hard copies of personal data (including any hard-copy consent forms) will be stored in a secure place within University premises, or those of an approved partner.			✓
7.3	Only the student and advisor will have access to the data generated from the study. Note: The advisor may share the anonymised data with other researchers at the University of York, but the consent form needs to make this clear.			✓
7.4	The data will be preserved beyond the study in line with University policy and will be placed in the custody of the advisor at the end of the project, or destroyed in accordance with information provided to participants.	✓		
7.5	<p>All data will be anonymised prior to analysis. Please state your method of anonymisation:</p> <div style="border: 1px solid black; padding: 10px; margin-top: 10px;"> <p>Data Masking: Replacing sensitive elements with modified versions (e.g., replacing characters of a name with asterisks).</p> <p>Pseudonymization: Replacing private identifiers with fake identifiers or pseudonyms.</p> <p>Generalization: Replacing precise data with ranges</p> </div>	✓		

	<p>or generalized values (e.g., replacing exact ages with age ranges).</p> <p>Data Swapping or Shuffling: Interchanging values between records to remove the original data associations.</p> <p>Noise Addition: Adding random noise to data to mask original values.</p>			
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Section 8. Further Project Information

Human Data

If you have participants in your project or if the data you are working with is about humans, briefly specify each of the following.

8.1. Who are the target participants or data subjects? And how are you recruiting them or how were the data about them collected?

Not Applicable.

8.2. Exactly what pieces of personal and demographic information you are collecting or using from an existing dataset? Explain why you need each.

Not Applicable.

8.3. How are you planning to publish your data and analysis results: on an aggregate basis or on an individual basis? If on an individual basis, explain why it is **necessary** to do so and if they will be anonymised.

I am planning to publish my data and analysis results on an aggregate basis.

8.4. Is there a risk that the data or analysis results you publish can be de-anonymised? If yes, explain how you are planning to mitigate it.

Yes, there is a risk of de-anonymization when dealing with ESG data.

ESG Data Can Be Sensitive. ESG data often includes details about a

company's environmental practices, social impact, and governance structure. This information can be commercially sensitive or reveal negative aspects of a company, potentially impacting its reputation. Reconstructing Identities Through Details. Even if I remove names and direct identifiers, seemingly innocuous details in the data (e.g., location, industry size, specific environmental incidents) could be combined with external information to identify specific companies. This is especially risky for smaller companies or those operating in niche sectors.

Mitigating the Risk:

Here are some steps I can take to minimize the risk of de-anonymization:

Use Aggregated Data: Whenever possible, use aggregated data that represents industry trends rather than focusing on individual companies.

Differential Privacy Techniques: Explore techniques like differential privacy that add noise to the data while preserving its statistical properties for analysis.

Limit Data Sharing: Avoid sharing the raw data used in my analysis. Instead, focus on sharing the anonymized results and performance metrics.

8.5. If you have questionnaires or interviews, will you give participants the option of skipping any questions they do not want to answer? If any of your questions is/are mandatory, explain why it/they must be.

Not Applicable.

External Datasets

8.6. If you are using external datasets, please identify the relevant dataset licence or terms of use and justify why your project would be compliant with those terms. If the data is about humans, please also provide evidence that the data was initially collected with consent.

1- The dataset and model associated with ESGBERT

<https://huggingface.co/ESGBERT>

T. Schimanski et al., "Bridging the gap in ESG measurement: Using NLP to quantify environmental, social, and Governance Communication," SSRN Electronic Journal, 2023. doi:10.2139/ssrn.4622514

2- The model FinBERT

<https://github.com/yya518/FinBERT>

<https://huggingface.co/yiyanghkust/finbert-tone>

A. H. Huang, H. Wang, and Y. Yang, "finbert: A large language model for extracting information from financial text*," Contemporary Accounting Research, vol. 40, no. 2, pp. 806-841, Jan. 2023. doi:10.1111/1911-

3846.12832

Both data and model from 1 and 2 are licensed under the Apache-2.0 license. This license is one of the most permissive and open licenses available, allowing for both commercial and non-commercial use, distribution, modification, and distribution of modified versions of the software, provided that the original source and the contributions are properly credited. My project's compliance hinges on adhering to the Apache-2.0 licensing terms for any use, modification, or distribution of the models and datasets. The data is from publicly available or non-restricted sources, and the Apache-2.0 license governs the model, my project should be in good standing provided it respects these guidelines.


3- LLaMa-2 is released under a Community License Agreement by Meta AI. Under this agreement, users are granted a non-exclusive, worldwide, non-transferable, and royalty-free limited license to use, reproduce, distribute, copy, create derivative works of, and make modifications to the LLaMa-2 Materials. This license agreement covers various elements including the machine-learning model code, trained model weights, and other related materials provided by Meta AI. Redistribution of LLaMa-2 materials requires providing a copy of the agreement to third parties and retaining certain attribution notices. Additionally, the use of LLaMa-2 materials must comply with applicable laws and regulations. There are additional commercial terms for entities with a large user base (greater than 700 million monthly active users), requiring them to request a license from Meta, which may be granted at Meta's discretion

<https://ai.meta.com/llama/license/>

Section 9. Student Declaration

Please mark boxes below that apply and sign.

✓	I have considered the ethical implications of this project and have identified no significant ethical implications requiring a full ethical application submission to the Physical Sciences Ethics Committee.
	I will include all supporting documents (e.g. consent form, information sheet, questionnaires, interview schedules) with this application.
	All the components specified in Section 3 are included explicitly in the information sheet / consent form submitted with this application.

Student Name	Tin Yuet Chung
Student Signature	
Date	23 March 2024

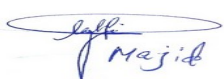
Section 10. Advisor (or Module leader) Approval

If this project is related to any previously approved work, please include the application reference for that work here and briefly explain the similarities and differences.

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Please mark boxes below that apply and sign.

X	The student has taken all reasonable steps to ensure ethical practice in this study and I can identify no significant ethical implications requiring a full ethical application submission to the Physical Sciences Ethics Committee.
	I have checked and approved all supporting documents required for this application.
X	I understand that completion of this form indicates that from the ethical point of view I am willing to share responsibility for the work being conducted.

Advisor Name	Dr Majid Latifi
Advisor Signature	
Date	26 th March, 2024

Submission

Please make sure this form is completed in full, signed by both the student and the advisor, and accompanied by required supporting

documents (e.g. participant information sheet and consent forms). Otherwise, the approval process is delayed.

Please convert this form to PDF after it is finalised and before submission.

Please submit this form and all supporting documents, preferably all in PDF (unless other file types are appropriate), to the Departmental Ethics Officers through the submission form listed in the [CS Ethical Approval webpage](#).