

## Electronic Thesis/Dissertation ("Thesis") Submission

Section I: To be completed by student and forwarded to Thesis Advisor(s)		
Name: Bishwamitra Ghosh	Student No.: A0178609N	<b>Optional</b> Open Researcher & Contributor ID (ORCID)* ( <a href="https://orcid.org/register">https://orcid.org/register</a> ) <a href="https://orcid.org/0000-0003-2971-8975">https://orcid.org/0000-0003-2971-8975</a>
Degree: PhD	Department: Computer Science	
Thesis Title: Interpretability and Fairness in Machine Learning: A Formal Methods Approach		
<b>Student Declaration and Certification:</b>  1. I hereby submit the Thesis as approved by my Thesis Advisor(s).  2. I have read and understood the NUS Intellectual Property Policies ( <a href="https://myportal.nus.edu.sg">https://myportal.nus.edu.sg</a> ) and agree to be bound by them. Without prejudice to the generality of the aforementioned Policies, I hereby grant NUS an irrevocable, unconditional, perpetual, transferable, sub-licensable, royalty free license (the "License") to: (i) publish, reproduce, distribute, display, and store the Thesis in all forms and media, including without limitation to publish one or more electronic copies on the NUS computer networks (whether public or private, including without limitation the Internet and the NUS Intranets) and to publish one or more physical copies for NUS' teaching, research and academic purposes and any business usual to a university or institution of research and/or higher learning (such as publishing and licensing activities and inclusion in the NUS library collection); and (ii) authorise or grant sub-licences to any other person to make one electronic and one physical copy of the Thesis. Except where I have checked <b>Section I, 3(c)</b> below, I warrant that I am the sole author and owner of the copyright in the Thesis, and I have full right, capacity, and authority to provide the License;  3. I warrant that [ <b>check one only</b> ]:  <div style="margin-left: 20px;"> <input checked="" type="checkbox"/> (a) The Thesis does not contain any third party copyrighted materials, or any proprietary/confidential information relating to any (including potential) intellectual property rights (including without limitation patents or patentable information, valuable methodology or software);   <input type="checkbox"/> (b) Nothing in the Thesis infringes any intellectual property right of any person or entity. To the extent that the Thesis incorporates any material not original to me, I acknowledge and agree that I am the sole party responsible for obtaining any and all copyright clearances as specified in the form attached hereto as <b>Appendix A</b>. I have obtained all necessary permissions, approvals, and consents required to (i) use and reproduce such material in the Thesis; and (ii) allow such material incorporated in the Thesis to be printed, published, reproduced and publicly distributed by NUS, including the right to publish and distribute on the Internet or by means of any other electronic medium throughout the world. <b>Copies of the copyright clearances obtained by me are attached to this submission form</b>;   <input type="checkbox"/> (c) I am in the process of obtaining all necessary copyright clearances (as defined in <b>Section I,3(b)</b> above); and the abstract of the Thesis does not contain any third party copyrighted materials, or any proprietary/confidential information relating to any (including potential) intellectual property rights (including without limitation patents, patentable information, valuable methodology or software).                 </div>		

 4. I warrant that I am in strict compliance with the NUS Code and Procedures on Research Integrity (<http://www.nus.edu.sg/dpr/Governance/integrity.html>) in connection with the preparation and completion of the Thesis;  
  
 5. I warrant that nothing in the Thesis is obscene, defamatory or libellous, violates any right of privacy or any other right of any person or entity, or is otherwise unlawful; and  
  
 6. I shall fully indemnify and hold harmless NUS against any and all losses, costs, damages, claims, demands, actions, proceedings, liabilities and expenses whatsoever (including but not limited to all legal costs or solicitors' fees on a full indemnity basis) that NUS may incur or suffer in connection with or arising from any breach of my warranties and covenants herein in relation to the Thesis. The rights of NUS as aforesaid are in addition to (and not in substitution of) all other rights and remedies available to NUS at law, in equity, under contract or otherwise.
 


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Signature of Student

10 August 2023

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Date

## Section II: To be completed by Student and Thesis Advisor(s)

### (A) Access Level for Thesis:

I agree, in consultation with my Thesis Advisor(s) that the Thesis be given the access level specified below [**check one only**]:

- ☒ 1. **Unrestricted Internet Access**  
Release the entire Thesis immediately for worldwide access.
- ☐ 2. **Access Restricted to NUS Intranet for Limited Period**  
Release the entire Thesis immediately for NUS Intranet Only access from \_\_\_\_\_ (MM/YYYY) to \_\_\_\_\_ (MM/YYYY), up to a maximum of TWO years (24 months) for the following reasons (please specify; attach separate sheet if necessary):  
\_\_\_\_\_.


After this period, the entire Thesis will be released for access worldwide. Extensions of up to TWO additional years at a time may be requested by the student or the Thesis Advisor(s) and require approval from Dean of NUS Graduate School or his/her nominee.

- ☐ 3. **Totally Restricted Access for Limited Period**  
Withhold access to the entire Thesis from \_\_\_\_\_ (MM/YYYY) to \_\_\_\_\_ (MM/YYYY), up to a maximum of TWO years (24 months) for the following reasons:
- ☐ (i) Thesis includes creative work which will be published
- ☐ (ii) Thesis will be published as a book, a series of articles or as monograph, and to release on the Internet will be construed as prior publication
- ☐ (iii) Thesis contains or might contain proprietary/confidential information which the student/Thesis Advisor(s) wants to incorporate into a patent application and has not been done
- ☐ (iv) Thesis contains third party proprietary/confidential intellectual property (including without limitation to patent(s) and/or software) and has not obtained the relevant consent.  
*\* It is the responsibility of the student to obtain the relevant consent and if the student has not done so before the end of the restricted period, to apply for a further extension to withhold access to the Thesis for up to another TWO years. Such extension will need to be approved by the Dean of NUS Graduate School or his/her nominee.*
- ☐ (v) Other Reasons (please specify, attach separate sheet if necessary):  
\_\_\_\_\_.

After this period, the entire Thesis will be released for access worldwide. Extensions of up to TWO years at a time may be requested by the student or the Thesis Advisor(s) with the appropriate consultations, where applicable, and require the approval of Dean of NUS Graduate School or his/her nominee.


- ☐ 4. **Totally Restricted Access for Indefinite Period**  
Withhold access to the Thesis indefinitely

For indefinite embargo of the thesis, the student must submit a request, with valid reasons, to the Dean of NUS Graduate School or his/her nominee for approval, with the support of the Thesis Advisor(s), Head of Department and Dean of Faculty/School. The request must be submitted on the "Request for Indefinite Period of Restricted Access to Electronic Thesis" form available at <https://myportal.nus.edu.sg/studentportal/nusgs/gd/>. The endorsed form must then be submitted together with this form.

  
\_\_\_\_\_  
Signature of Student

10 August 2023

\_\_\_\_\_  
Date

  
\_\_\_\_\_  
Name and Signature of Thesis Advisor

25 August 2023

\_\_\_\_\_  
Date

\_\_\_\_\_  
Name and Signature of Co-Advisor

\_\_\_\_\_  
Date

\_\_\_\_\_  
Name and Signature of Co-Advisor

\_\_\_\_\_  
Date

**(B) ProQuest Dissertations and Theses (PQDT) Submission Option**



I agree to opt-in to PQDT and to release my thesis in accordance to the access level as indicated in Section II, Part (A).

I have also read and understood the ProQuest PhD and Master's Dissertations and Theses Dissemination Agreement as indicated at this link: [https://myportal.nus.edu.sg/studentportal/nusgs/gd/docs/ProQuest\\_PhD-and-Masters-Dissertations-and-Theses-Dissemination-Agreement.pdf](https://myportal.nus.edu.sg/studentportal/nusgs/gd/docs/ProQuest_PhD-and-Masters-Dissertations-and-Theses-Dissemination-Agreement.pdf)



I do not agree to opt-in to PQDT

**Section III: To be completed by Head of Department**

(Head of Department need not complete this section where Option 4 "Totally Restricted Access for Indefinite Period" has been selected – refer to Section II, Part A on Page 2).

The submission of the Thesis and access level specified is **[please check box]**:



Approved



Not Approved

Comments (if any):

\_\_\_\_\_  
Name of Head of Department

\_\_\_\_\_  
Signature and Date

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[Name & address of the copyright owner]

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My thesis *[provide a short description of the thesis – eg. "...seeks to highlight the differences and the similarities in the accounting systems in the US, Australia, Singapore, Malaysia and Japan, and the possibilities for harmonization of these diverse systems."]*

I am writing to seek your kind permission to use and reproduce, for purposes of submission, publication and distribution of my thesis as described above, the following works for which I understand you to be the copyright owner:

- (a) *[the (whole / part of) (work/publication/chart/diagram/photo etc.)]*;
- (b) [                    ]; and
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Due acknowledgment of your permission and ownership of copyright in the work will be made in my thesis.

If you are agreeable to the use of your copyright in the work in my thesis, I would be grateful if you could sign and return the attached duplicate copy of this letter to me at your earliest convenience. A self addressed envelope is attached for your convenience.

Yours sincerely,

[Student]

**DUPLICATE**

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If you are agreeable to the use of your copyright in the work in my thesis, I would be grateful if you could sign and return the duplicate of letter to me at your earliest convenience. A self addressed envelope is attached for your convenience.

Yours sincerely,

[Student]

I, \_\_\_\_\_, of \_\_\_\_\_ hereby grant you permission to use my copyright to the work described above in your thesis and for the purposes set out in this letter.

\_\_\_\_\_  
(Signature of copyright owner)

Date: