

## Instructions to Computer Based Assessment

Paper Release: Sunday 11 April 2021.

Submission Due: Sunday 18 April 2021, 2359 hrs.

1. The estimated duration of this assignment is **6 hrs + 2.5 hrs of computation**<sup>1</sup>. The actual hours will depend on your familiarity of the concepts and coding, and you are allowed internet research and have several days to submit.
2. Type all your answers (including software output screenshots and code where necessary) into the CBA Submission word document template provided. All answers must be fully contained inside the word document provided. i.e. do not ask examiner to refer to any other sources to see your answers. Save and rename the submission file with your registered full name as prefix to the file.
3. This is an open-book individual assignment. You are allowed to use internet.
4. If you use someone else's work or opinion, quote and cite properly<sup>2</sup>. Read Appendix A and Appendix B in this document.
5. You are allowed to use the following software to answer the questions:
  - R and Rstudio
  - Python and any Python IDE.
  - Microsoft Excel
  - Microsoft Word
6. Your submission will be graded on the assessment rubrics, compliance to instructions and presentation. Label your answers in the word document to correspond to the question number/part. Most questions are designed to be open-ended and have several correct answers or ways to express your answer. Strive to be concise and precise in your answers. Excessive words or quotes will be penalised. You are not expected to write essay and excessive words signal that you do not know what is important vs unimportant.

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<sup>1</sup> R RandomForest computation on the trainset in my laptop (Intel core i7, 8GB RAM) took 2.48 hrs. MARS took 8 mins. Please prepare ahead and be patient. I let it run overnight while I sleep, and used `system.time()` to measure the time elapsed. If your laptop has much lower specs, you may want to use NBS computer lab to run random forest.

After obtaining the RandomForest object, it is recommended to save the image (that includes all R objects in the R session) via `save.image()` function so that you can load and reuse all the objects without redoing the same RandomForest training again. Refer to <https://www.statmethods.net/interface/workspace.html>

<sup>2</sup> You are expected and encouraged to copy and modify code (R or/and Python) to suit your purpose. This is why the software is open source and free. Just remember to cite your source.

7. You may use more than one page per question, if necessary, but start each new question number on a new page.
8. You are free to use either R or/and Python. At least 3 files to be submitted. Do not zip the files. Submit as separate files:
  - a. Word document (including your Declaration of Academic Integrity in the cover page).
  - b. PDF file of the same Word document listed above.
  - c. If you use R, submit one Rscript or Rmarkdown with your name as prefix e.g. Tony Stark.R
  - d. If you use Python, submit one Python script or notebook with your name as prefix e.g. Tony Stark.py
9. Upload all submission files into **NTULearn Class Site > CBA Submission** link via Attach Files > Browse Local Files. Late submission will incur penalty.
10. If you have any questions or could not comply with any instructions, check with your instructor before submission due.

## Appendix A: Academic Integrity Reminder

Dear all Students:

As we are nearing the period where most course assessment items are falling due, including the written assignments and tests, you are gently reminded of NTU's Academic Integrity policy.

Please note carefully that the university takes a very serious view of any form of breach of academic integrity, including but not limited to: plagiarism, ghost-writing, obtaining prohibited assistance and advantages, accessing restricted assessment materials (for any closed book or restricted assessment). The penalties for these, depending on the circumstances and the degree of dishonesty involved, may include failure for the whole course and even suspension or expulsion.

You are reminded that in assignments all sources formal and informal **(including borrowing of substantial ideas from fellow students)** must be acknowledged and citations for published sources must be provided. Hence, careful citation noting and referencing is a must. This is out of respect for all authors and creators and because of the academic value of providing references for verification and simply basic honesty. In particular, you are warned against using words and non-commonplace ideas of others as if they were your own (plagiarism) or getting others to write part or all your submissions for you (ghost-writing - cheating).

**If you know directly and specifically of fellow students committing these or other academic integrity infringements, it is your duty to report that knowledge to your instructor, and any assistance towards committing them or covering them up would also be an academic infringement.**

We are confident that our students can be expected to uphold the highest standards of integrity in all matters and are issuing this reminder out of an abundance of caution lest that a few should slip these standards to the sorrow of all.

Our best wishes to all of you with encouragement to treat these assessments as an opportunity to enjoy exercising your skills and knowledge, and to simply do your best.

## Appendix B: Academic Integrity Policy

### 1. Introduction

The Student Academic Integrity Policy supports the University in the “pursuit of truth which depends on absolute integrity of conduct among all members of the community” and in creating “a climate of respect for the individual, and encourages self-respect which makes an individual worthy of trust”.<sup>3</sup> All members of the NTU community are responsible for upholding the values of academic integrity in all academic undertakings.

### 2. Objective

This policy is to reinforce the University’s commitment to maintain integrity and honesty in all academic activities of the University community. It applies to all undergraduates of the University in all programmes of study, including non-graduating students.

### 3. Definitions

The following are defined as acts of academic dishonesty in the context of this policy:

#### **(a) Plagiarism**

NTU Honour Code currently defines ‘plagiarism’ as ‘to use or pass off as one’s own, writings or ideas of another, without acknowledging or crediting the source from which the ideas are taken’. This includes:

- The use of words, images, diagrams, graphs or ideas derived from books, journals, magazines, visual media, and the internet without proper acknowledgement;
- Copying of work from the internet or any other sources and presenting as one’s own; and
- Submitting the same piece of work for different courses or to different journals and publications.<sup>4</sup>

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<sup>3</sup> Enshrined in the NTU Honour Code

<sup>4</sup> In the event that the same piece of work is re-used in a different context, full acknowledgements with quotation marks and citations are required.

## **(b) Academic Fraud**

Academic fraud is a form of academic dishonesty involving cheating, lying and stealing. This includes:

- Cheating - Bringing or having access to unauthorised books or materials during an examination or assessment, or in any work to be used by the lecturer, tutor, instructor or examiner as a basis of grading.<sup>5</sup>
- Collusion - Copying the work of another student, having another person write one's assignments, or allowing another student to borrow one's work.
- Falsification of Data – Fabrication or alteration of data to mislead such as changing data to get better experiment results.
- False Citation – Citing a source that was never utilised or attributing work to a source from which the referenced material was not obtained.

## **(c) Facilitating Academic Dishonesty**

This includes allowing another student to copy an assignment that is supposed to be done individually, allowing another student to copy answers during an examination/assessment and taking an examination/assessment or doing an assignment for another student.

## **4. Policy**

- 4.1 The foundation of good academic work is honesty. Maintaining academic integrity upholds the standards of the University.
- 4.2 The responsibility for maintaining integrity in all the activities of the academic community lies with the students as well as the faculty and the University. Everyone in this community must work together to ensure that the values of truth, trust and justice are upheld.
- 4.3 Academic dishonesty affects the University's reputation and devalues the degrees offered.
- 4.4 The University will impose serious penalties on students who are found to have violated this Policy. The following penalties may be imposed:
  - expulsion;
  - suspension;

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<sup>5</sup> As defined in the NTU Honour Code

- zero mark/fail grade;
- marking down;
- re-doing/re-submitting of assignments or reports; and
- verbal or written warning.