Faculty of Natural and Mathematical Sciences
Department of
Engineering/Information

King's College London
Strand Campus, London,
United Kingdom

7CCSMPRJ/7CCSMUIP

Individual Project Submission 20XX/XX (Replace XX by year)

Name:	Your name goes here
Student Number:	Student number goes here
Degree Programme:	Programme title goes here
Project Title:	Project title goes here
Supervisor:	Supervisor's name goes here
Word Count:	Word count goes here

RELEASE OF PROJECT

Following the submission of your project, the Department would like to make it publicly available via the library electronic resources. You will retain copyright of the project.

Check the appropriate box below

☐ I **agree** to the release of my project

☐ I **do not** agree to the release of my project

Signature: Signature **Date:** September 27, 2019

Department of Engineering/Information
King's College London
United Kingdom

7CCSMPRJ/7CCSMUIP Individual Project

Project title goes here

Name: **Your name goes here**
Student Number: Student number goes here
Course: Programme title goes here

Supervisor: Supervisor's name goes here

This dissertation is submitted for the degree of MSc in Programme title goes here.

1 Template Descriptions

1.1 Template Folder Structure

After unzip the Latex template, you will find the following folders:

- **"root" folder:** The file "thesis.tex" is the master file of the whole document, which defines the structure of the chapters and other settings.
- **"contents" folder:** This is the folder for all chapters. Use the path

  `contents/chapter_filename`

  when including chapters. The following files can be found in this folder.

  - acknowledgements.tex: the contents of the Acknowledgement chapter.
  - abstract.tex: the contents of the Abstract chapter.
  - nomenclature.tex: the contents of the Nomenclature chapter.
  - introduction.tex: the contents of the Introduction chapter.
  - background.tex: the contents of the Background Theories chapter.
  - literature.tex: the contents of the literature review.
  - approach.tex: the contents of the approach section.
  - results.tex: the contents of the results section.
  - conclusion.tex: the contents of the Conclusion chapter.
  - app_1.tex: the contents of the Appendix chapter.
  - sample_1.bib: the bibtex file for references. Remember to run "bibtex" to update the list of reference section.
  - TemplateDescriptions.tex: this is the content of this chapter (Template Description). Remove the line

    ```
    \include{contents/TemplateDescriptions}
    ```

    from "thesis.tex" which will remove the Chapter "Template Descriptions" from the document.

  Create a new chapter file if necessary.

- **"figures" folder:** This is the folder for all figures. Use the path

  `contents/figure_filename`

  when including figures.

contents/sample1 bibtex, run bibtex

1.2 Student and Project Information

The master file of this template is "thesis.tex". Change the following lines accordingly in "thesis.tex" to include your information.

```
%=============================================================
% Change below accordingly and remove``\red{}''
%=============================================================
\modulecode{\red{7CCSMPRJ/7CCSMUIP}} %Use the right module code
\submissiontitle{Individual Project Submission \red{20XX/XX (Replace XX by year)}}
\studentnumber{\red{Student number goes here}}
\programme{\red{Programme title goes here}}
\supervisor{\red{Supervisor's name goes here}}
\wordcount{\red{Word count goes here}}
\title{\red{Project title goes here}}
\author{\red{Your name goes here}}
\ReleaseProject{0} %Replace 0 by 1 if release project; Replace 0 by 2 if not release proj
\department{\red{Engineering/Information}} %use the right department
%=============================================================
```

Remove the line

```
\include{contents/TemplateDescriptions}
```

from "thesis.tex" which will remove the Chapter "Template Descriptions" from the document.

Replace the image "signature.png" in the folder "figures" by your signature image in "png" format.

Acknowledgements

This is a short paragraph to thank those whose have helped you complete your project, such as your supervisor, your domain advisor(s) and your roommate/partner/friends/family/pets... This section will not be marked.

Abstract

The Abstract is a short, executive summary of your project. This should include a brief description of the project objectives and research question(s) addressed, followed by a brief description of the main contribution(s) of the project, including a summary of the results achieved and the primary conclusions drawn from the work. This should appear on a single page by itself and should be the second page of the report.

The content of "Nomenclature" is in "\contents\nomenclature.tex". All abbreviations and symbols used in the report must be listed and defined in alphabetic order.

Nomenclature

a	The number of angels per unit area
A	The area of the needle point
c	Speed of light in a vacuum inertial frame
h	Planck constant
LMI	Linear Matrix Inequalities
N	The number of angels per needle point

Contents

List of Figures

List of Tables

2 Introduction

The Introduction is the first content section of your report. You should describe the general area (e.g., application domain) in which your project research is conducted, the motivation for conducting the research and the overall aims of the research. Be sure to outline your research questions and give a brief summary of the conclusions drawn, though the conclusions will be detailed later in the report. With the Introduction, you want to interest your reader and tell them why they should care about your research and why they should read the rest of the report. The report will be read (marked) by examiners with a technical Computer Science background, but not necessarily any knowledge of your domain, so make sure that you provide enough information for a naive reader.

3 Background

The Background section of your report should provide the reader with enough technical background so that they understand the area in which your research is conducted. This should be the kind of information that you might find in a textbook that teaches someone about the area. The next section of the report ("Related Work") is where you describe new research in your area, so think of this Background section as where you provide enough information so that the reader will be able to understand the important details contained in the Related Work section.

Example of a bibliography entry is given by Johnstone [1]. Further information can be found at: [**?**].

4 Related Work

The Related Work section of your report should provide a review of recent literature in the area of your research. This is distinguished from the Background section because it is typically newer and more experimental. If there are standard terms or techniques mentioned in the literature, then you can define what these are in the Background and use the Related Work section to explain how researchers have used the standard techniques as benchmarks or fundamental methodologies for their research. For example, if you review an article that describes using k-means clustering for finding appropriate groups of patients with similar sets of symptoms, then you could describe what k-means clustering is in your Background section and describe how researchers used that technique on patient data in your Related Work section. When you review literature, be sure to explain how the articles you cite are relevant to your project. Be critical—outline pros and cons of the work you are reviewing. Be clear to explain how the work you review is different from your own work. Note that you may find it easier to compare and contrast others' techniques with yours later in the report, after you have explained your own work. That is fine—just be sure to forward reference in the Related Work where you will compare to your own work (and backward reference in the later sections back to the Related Work). This can include information that you had in your Project Proposal report that was due in April, but should typically be substantially expanded from what you had in your proposal.

Refer to links and resources on the KEATS page to help with your literature review. Be sure to provide complete references when someone's work is mentioned.

Examples of articles we might cite are [2] and [3].

5 Approach

The Approach section of your report should describe what you did. You should discuss your research questions in detail here, explaining for each question how you addressed each question (i.e., what techniques you used) and how you evaluated the success (or failure) of your investigation. This should include a description of the data set(s) that you used for your research (e.g., what you included in your Data Acquisition report that was due in March).

This section is where you explain what you have done. Reiterate the problem you are trying to solve. Defend your reasons for choosing the techniques that you selected. Discuss the pros and cons of various existing algorithms and approaches, including narrative of things that you tried that did not work (with explanation about why they did not work). Detail the differences between your method and existing approaches in the literature (e.g., techniques you mentioned in the Related Work section). If you perform experiments, then describe the design of those experiments in this section.

6 Results

The Results section of your report basically contains the answers to your research questions. This section should present the results of your evaluation, provided quantitatively, qualitatively and/or visually, as appropriate, followed by an analysis of the results. If you have performed experiments and/or analysis, then these should be presented here. Use figures and drawings to explain the significance of your results. Discuss with your project supervisor(s) and/or domain advisor(s) how best to present your results. The main point is to make sure that it is clear to the reader what the answers to your research questions are and how you arrived at these answers.

7 Legal, Social, Ethical and Professional Issues

A chapter gives a reasoned discussion about legal, social ethical and professional issues within the context of your project problem. You should also demonstrate that you are aware of the Code of Conduct & Code of Good Practice issued by the British Computer Society (BSC) (`https://www.bcs.org/membership/become-a-member/bcs-code-of-conduct/`) for computer science project and Rule of Conduct issued by The Institution of Engineering and Technology (IET) (`https://www.theiet.org/about/governance/rules-of-conduct/`) for engineering project. You should have applied their principles, where appropriate, as you carried out your project. You could consider aspects like: the effects of your project on the public well-being, security, software trustworthiness and risks, Intellectual Property and related issues, etc.

8 Conclusion

The Conclusion is the last section of your report (other than Appendixes). In this section, you can revisit the research questions and summarise your answers. Clearly explain how your investigation and your answers are a contribution—why your work is worthy of a passing mark. Also in the Conclusion section, it is good to have subsections that highlight (a) Future Work, in case you were going to keep working on the same line of research or you wanted to recommend follow-up investigation for another student to pursue next year; and (b) Lessons Learned, where you can explain how you might do things differently if you started over, because you've learned valuable things along the way (these could be technical, but they could also be personal, such as organising your time better or listening to the project coordinator who told you to BACK UP your work frequently).

References

[1] I. M. Johnstone, *Gaussian estimation: Sequence and multiresolution models*. 2011.

[2] J. Doe, *The Title*. PhD thesis, University of Mars, 2011.

[3] I. Johnstone and B. Silverman, "Ebayesthresh: R programs for empirical bayes thresholding," *Journal of Statistical Software*, vol. 12, no. 8, pp. 1–38, 2005.

The content of "Appendix" is in "\contents\app_1.tex"

A Appendix

Supplementary materials (such as source code, user menu, etc) could be included. Each appendix must be labelled (for example, Appendix A, Appendix A.1, Appendix A.2, Appendix B, Appendix B.1, etc.) and with heading. All Appendices must be referred in the text.

A.1 Points to Note

Please note the following points when you write your report:

- Consider the outline of the report. It is a good idea to start with the table of contents, which gives you an overall structure of the report.
- Show understanding of the topic and demonstrate the contribution of the work. 70% of the content of the report should be your own contributions and achievements.
- Always use your own words.
- The main report and any appendices must constitute one document.
- Pages must be numbered consecutively.
- Captions must be provided for all figures and tables.
- Equations (or important equations), figures and tables must be numbered.
- All figures and tables must be referred to in the text.
- Units of all variables must be provided.
- Numerical values (floating-point number) should be in 4 decimal places.
- Contractions should not be used.
- Check the punctuation of sentences. In particular, those sentences with equation. For example, if an equation is at the end of a sentence, a full stop should be used.
- All variables must be defined.
- Font face of variables throughout the report (in the text, equation, figures and table) must be consistent.
- Use proper headings for chapters, sections, subsections.

- Chapters, sections, subsections should be numbered and with the same numbering system throughout the report. It is suggested that vector and matrix variables should be in bold, scalar variables should be in italic.
- References must be used for materials used in the report that are not yours.
- A standard reference format must be adopted and be consistently applied through the report. General guidelines for reference format can be found on KEATS.
- Always backup your files.

B Review of stochastic calculus

B.1 Riemann integration

B.2 The Itô integral