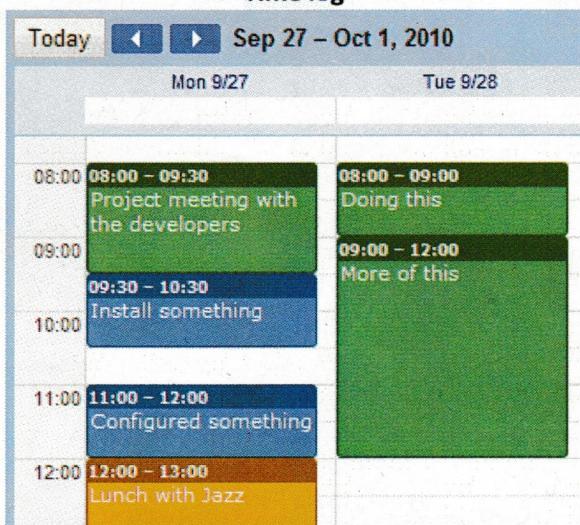


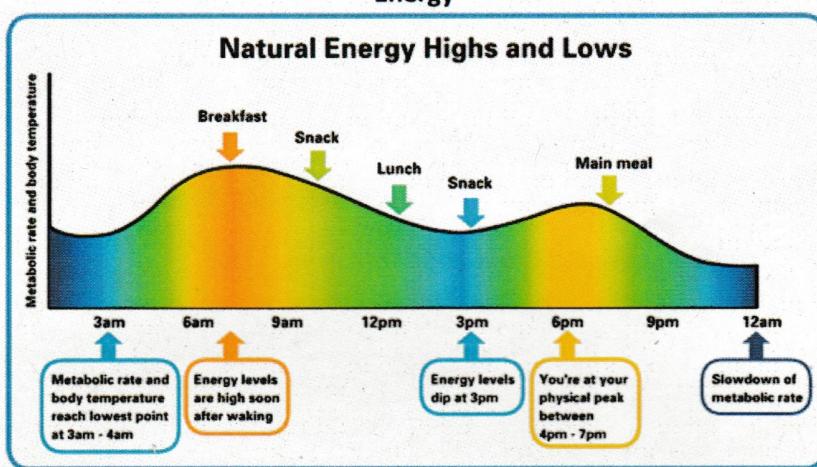
New International Version (Psalm 90:12)

Teach us to number our days, that we may gain a heart of wisdom.

Time log



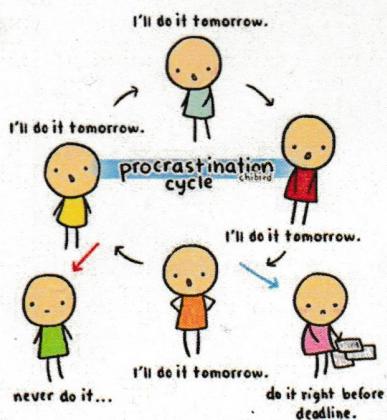
Energy



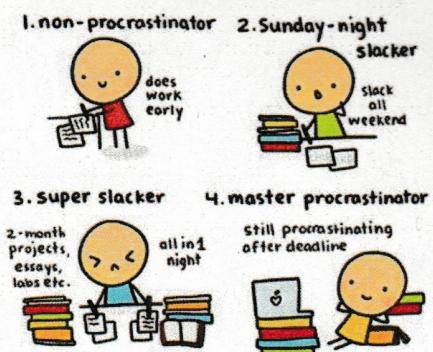
Prioritise

| | | NOT URGENT | | | |
|-----------|---|--|--|---|---|
| IMPORTANT | | NOT IMPORTANT | | | |
| URGENT | Quadrant #1 "NECESSITY" | Quadrant #2 "QUALITY & PERSONAL LEADERSHIP" | | Urgent | Not Urgent |
| | Your Key Action: "MANAGE" | Your Key Action: "FOCUS" | | | |
| IMPORTANT | Common Activities <ul style="list-style-type: none">- Crises- Deadline-driven activities- Medical emergencies- Other "true" emergencies- Pressing problems.- Last minute preparations | Common Activities <ul style="list-style-type: none">- Preparation and planning- Values clarification- Empowerment- Relationship-building- True recreation | | I The Procrastinator <ul style="list-style-type: none">• Exam tomorrow• Friend gets injured• Late for work/class• Project due today | II The Visionary <ul style="list-style-type: none">• Planning, goal setting• Paper due in a week• Exercise• Relationships/relaxation |
| | Common Activities <ul style="list-style-type: none">- Meeting other people's priorities and expectations- Frequent interruptions:- Most emails, some calls- Urgency masquerading as importance | Common Activities <ul style="list-style-type: none">- Escapist activities- Mindless tv-watching- Busywork- Junk mail- Some emails- Some calls | | III The Yes-man <ul style="list-style-type: none">• Unimportant phone calls• Interruptions• Other people's small problems• Peer pressure | IV The Slacker <ul style="list-style-type: none">• Too much TV• Endless phone calls• Excessive computer games• Mall marathons• Other time wasters |

Procrastinate



levels of procrastination



Why do we procrastinate?

| |
|--------------------------------|
| Don't know how |
| Don't know why |
| Don't know when |
| Don't like doing it |
| Think someone else is doing it |
| Forgetfulness |

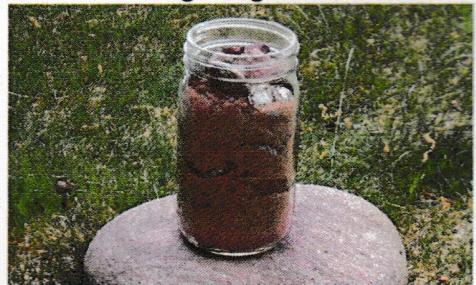
10 mins a time - break the cycle

Filling Strategy

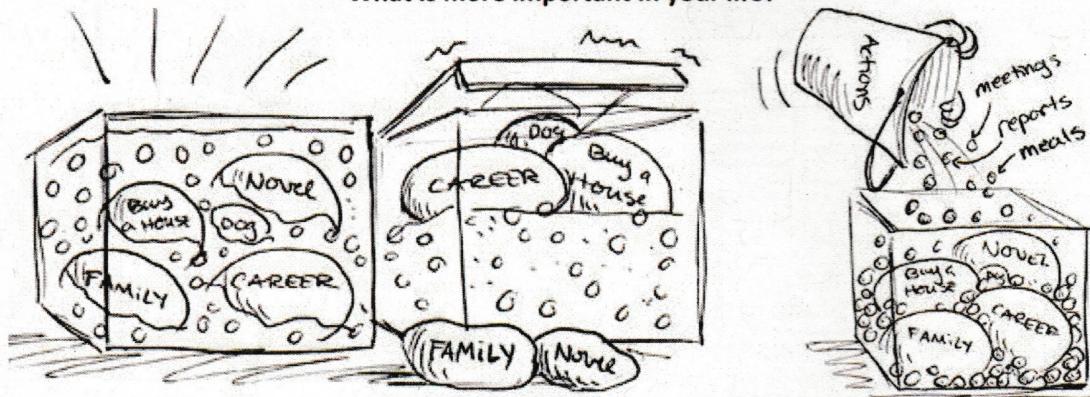
Small Thing First



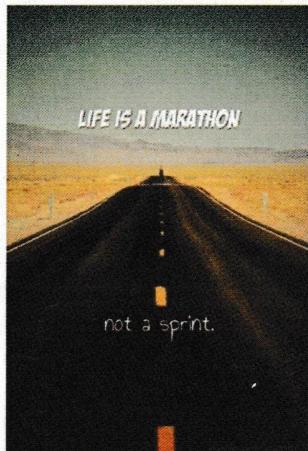
Big Thing First



What is more important in your life?



Life is a marathon

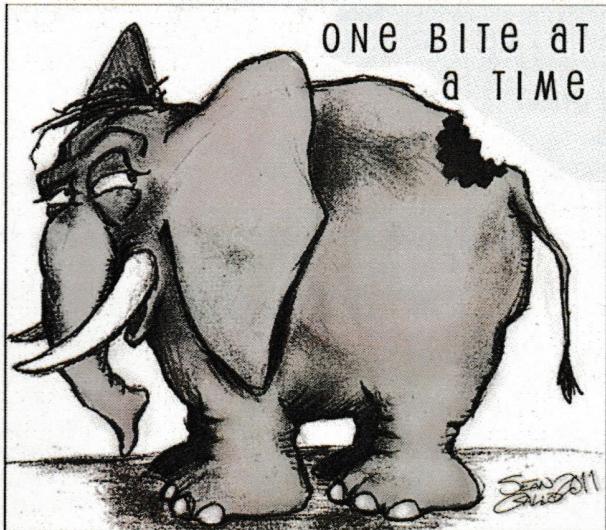


Whenever I see someone running faster than me,
I assume they aren't going as far.



somedecards
user card

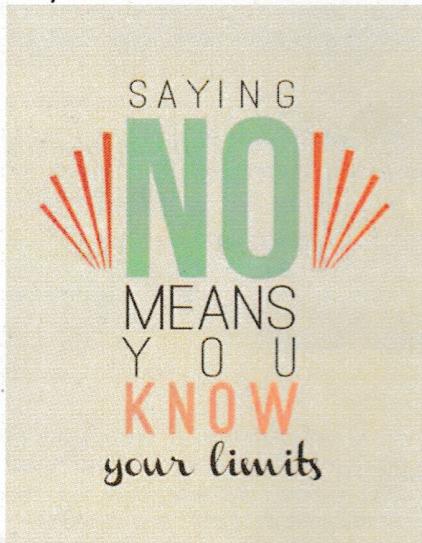
One bite at a time.



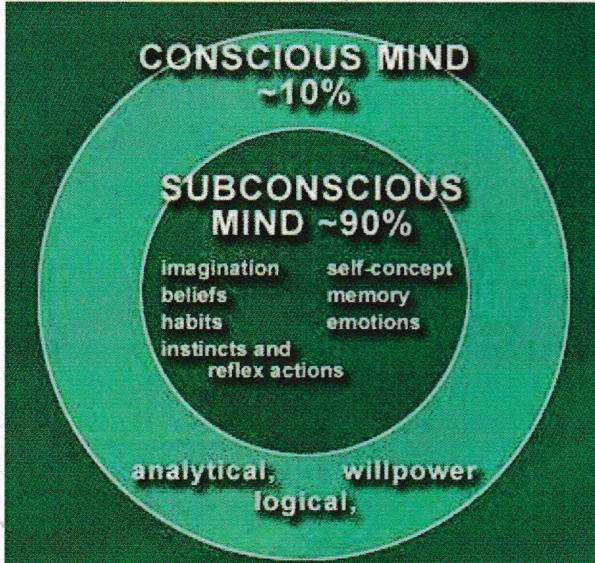
Learn to say NO

HOW TO SAY NO

1. Be clear of your vision (This is what you want to say yes to. Everything else = No)
2. Know the implications of saying yes (The more you say yes, the further you drift from your vision)
3. Realize saying no is okay
4. Use the medium you're most comfortable with (Facebook, IM, email, face-to-face - Whatever works)
5. Keep it simple (You don't owe anyone explanations)
6. Be respectful (Value the other party's stance)
7. Provide an alternative (Only if you want to)
8. Make yourself less accessible (Provide your contact only to those important to you)
9. Write everything down first (To process your thoughts)
10. Delay your response (No need to reply right away)
11. Sometimes, no reply is also a form of reply



Subconscious Mind – Sleep early and have sufficient rest



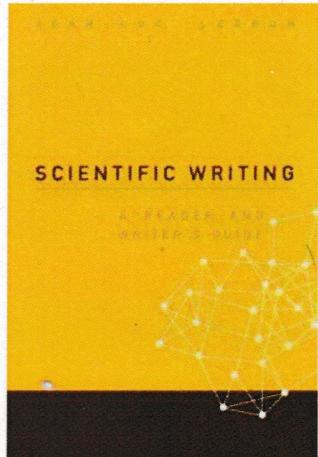
Writing Skills

Part I: Understanding the markers/readers' habit:

- a) all markers quick read your report.
- b) initial impression, in certain sequence: a) introduction, b) conclusion, c) images, equations, references
- c) then your dissertation will be read to get as much information as possible in 20-40 minutes.
- d) then marking form will be filled, and refer to, or look up for missing components.
- e) you must provide strong clues to help markers give you marks
- f) read the marking scheme, so that marker can easily tick the box

Scientific Writing : A Reader And Writer's Guide

Read this online (freely available from Swansea Library):



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Part II: Speed reading skills:

- a) Introduction
- b) Conclusion
- c) Images & Equations
- d) Ask questions
- e) Detail but fast reading: Topic sentence / concluding sentence (support sentences if necessary)

Part III: Writing skills

Bad Example:

1 Introduction

For hundreds of years, people have been entertained by the challenge of assembling the pieces of a jigsaw puzzle into a complete picture. There are two categories of jigsaw puzzle apictorial reconstruction and the pictorial reconstruction for the jigsaw puzzle. As shown in the Figure 1a, the shape and some other constraints can be used to solve the puzzle whereas in image 1b, only colour information can be extracted and used to solve the puzzle [1]. Certainly, this combinatorial challenge is one that inspires developments in computer science.

Freeman and Gardner first solved the computational problem of jigsaw puzzle [2] [3]. As with a physical jigsaw puzzle, the object of the computational problem is to adjoin several smaller jigsaws puzzle to form a complete picture. A Standard jigsaw puzzle ranges from 100 – 2500 pieces. As the number of jigsaw pieces increase, solving the jigsaw becomes much harder making it an NP - complete problem [4]. To decrease the complexity of the application different

Comments:

Here, the topic sentence is “For hundreds of years...”. After that, the reader would expect some evidences to follow up “entertained” or “jigsaw puzzle”. But there is none there.

The second sentence: “There are two categories of jigsaw puzzle apictorial reconstruction and pictorial reconstruction.” The reader would expect some explanation what is apictorial or pictorial reconstruction to follow, but there is none.

“Combinatorial challenge” is undefined, and is irrelevant to the previous or subsequent sentences.

For the first paragraph in the introduction, you are assumed to describe the project: “What is the jigsaw puzzle?”.

The whole paragraph seems like bits that stitched together – there is no organisation!

Revision from student:

1 Introduction

For hundreds of years, people have been entertained by the challenge of assembling the pieces of a jigsaw puzzle into a complete picture. The engraver and cartographer John Spilsbury, of London is believed to have produce the first jigsaw puzzle around 1760, using a marquetry saw. Early jigsaws, known as dissections, were produce by mounting maps on sheets of hardwood and cutting along national boundaries, creating a puzzle useful for teaching of geography [1]. Jigsaw puzzle soared in popularity during the Great depression, as they provided a cheap long-lasting, recyclable form of entertainment. It was around this time that jigsaw puzzle evolved to become more complex and more appealing to adults [1]. Over the time there have been several approaches in solving a jigsaw [2].

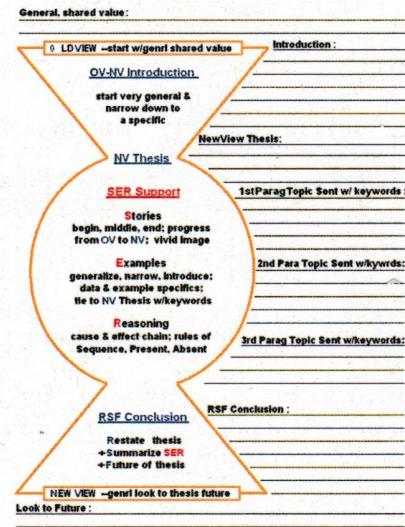
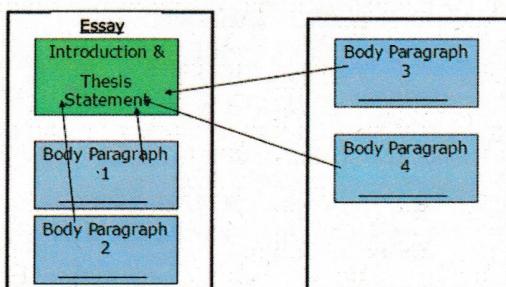
Some help on writing follows...

But, again, read the book first “Scientific Writing : A Reader And Writer's Guide”!

First understand the document flow.

Organization and flow...

- Each body paragraph and its topic sentence refer directly back to the thesis statement.



a) Top-Down / Brief introduction -> Detail explanation:

Introduction => Tell the readers what you are going to tell them

Body => Tell the readers what you want them to know

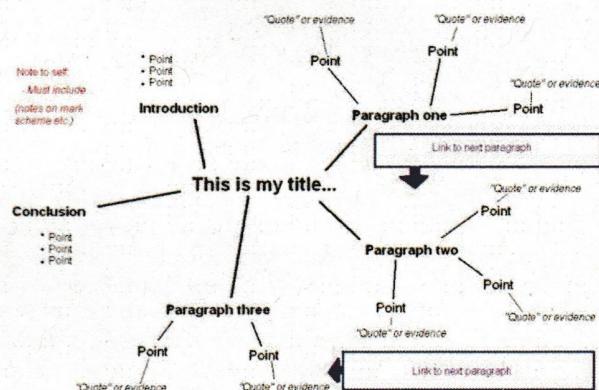
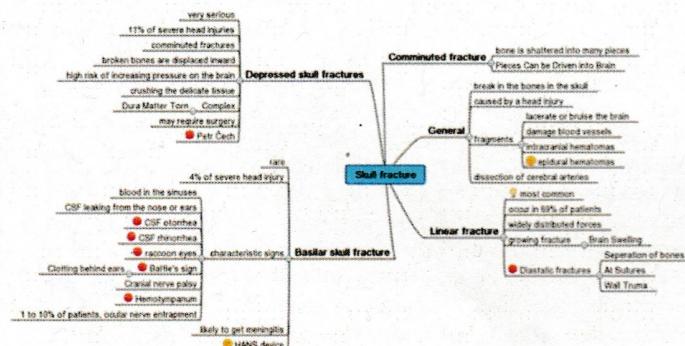
Conclusion => Tell the readers what you have just told them!

For each chapter, each section, each subsection, do the following recursively:

write in top down approach: Describe briefly, before going into details

For each paragraph: topic sentence, then supporting arguments.

b) Use mindmap



c) Use Hamburger Paragraph: Each idea in mindmap = one paragraph

Example - paragraph construction

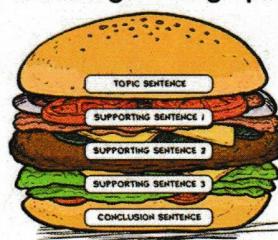
Topic sentence

There are severe health hazards directly linked to smoking. The link between smoking and cancer is well known. However, smoking is linked to other diseases such as emphysema and bronchitis. It is also proven that smokers have an increased chance of developing heart disease later in life. In the USA, smokers have been awarded damages from tobacco companies in recent court cases. Further there is evidence that even passive smoking can lead to increased health risks. Clearly, smoking is a dangerous habit and should be avoided.

Supporting sentences

Concluding sentence

Hamburger Paragraph

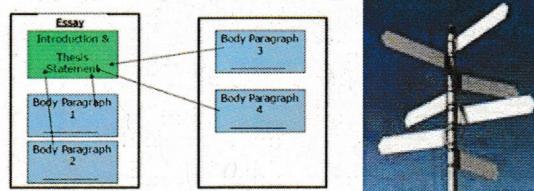


d) Signpost:

At the end of the introduction, describes which section tells the readers what.

"Section x discusses... Section y describes..."

Connect with next paragraph / section



e) Use/Provide section / subsection / subsubsection headers

f) Define clearly everything / names / variables when you use equations / symbols.

Remind readers if the definition are two pages away.

Do not reuse variable name for different things, especially equations

g) Offer high-level details, not low-level details or jargons.

One bad example:

that the physics engine will use to detect collisions, and simulate the physics of the ball. This is all done inside of a method named `resetBox2d`, it simply iterates over each vertex, and creates a `b2EdgeShape` between neighbouring vertices, creates a `b2FixtureDef` using the shape and the desired physics of that section, then adds all of those fixtures to the terrains `b2Body`. As there are now two things to do whenever the terrain is updated (update the terrains visual vertices, and physical vertices), it is now useful to create a `updateTerrain` method that calls them in the correct order. This function will be added to when more is implemented.

From the reader's perspective, you may ask:

What is `resetBox2d`, `b2EdgeShape`, `b2FixtureDef`, `b2Body`, `updateTerrain`, `fixtures?` section, visual / physical vertex?

These are all jargons from readers' perspective. The reader does not write the codes, so they all low-level details. In reader's mind, they are all undefined, and firstly encountered here. The reader will be lost, and don't understand what it means. **Readers** want to know the high-level ideas only!

g) Every figure you put must be cited and explained in the text.

h) Learn to use latex

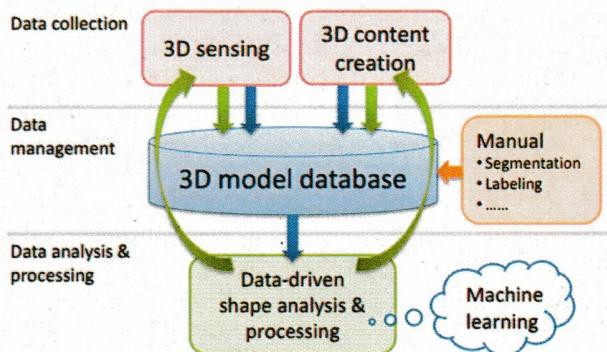
there is an implicit bonus on professional look and feel

don't argue with me to use Microsoft Word, learn something new.)

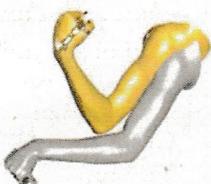
All lecturers / professors read research paper properly typesetted with latex.

i) Use plenty of "beautiful" images

j) Use pipeline & overview images in Method section, Examples see below:



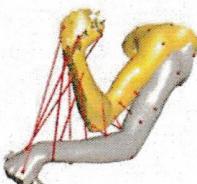
Source + Target



Source Samples



Correspondences

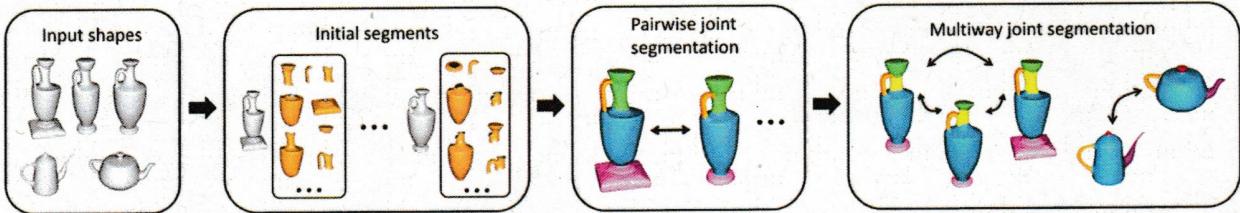


Rigid Clusters



Registration Result





Can you understand the rough idea of the work without reading the whole paper?

Reminder: Readers what to know the high-level ideas only in 20-40 minutes.

k) In a dissertation, remember! everything you say / claim must be supported either by:

- 1) a reference
- 2) experimental result

l) a professional dissertation will likely contain more than 30-60 references! (above 75)

m) don't say, "every one knows that...", "it is trivial that..."

No. It is not trivial, unless it is $1+1=2$.

Assume your reader ONLY has the knowledge of a year 2 undergraduate - that's when you begin the project.

n) Ask for and read (most up-to-date) marking scheme => help markers to tick the box.

o) Use pseudocodes (not java/c++/python code) to illustrate your points.

p) Put codes in dissertation only if necessary, and should only be in appendix.

q) Preferably, burn a CD or store codes in a USB stick (cheaper), and attached in the final dissertation.

Part IV: Latex, makes you reports look profession and save time!

Learn to use (Need internet connections):

<https://www.overleaf.com/>

Alternatively, there are many wonderful latex front-end. They are quicker than overleaf and offer more compilation control. But you will need several GB of installation files.

Two distributions, use either one of them:

MikTex: <http://miktex.org/>

TexLive: <https://www.tug.org/texlive/>

See SimpleLatex attached – a simple quick start pack.

To use, in the command prompt:

`pdflatex simple.tex`

`pdflatex simple.tex`

`bibtex simple.tex`

`pdflatex simple.tex`

`pdflatex` processes latex code and generates pdf.

`bibtex` processes `simple.bib` to locate and manage references.

`simple.bib` stores all bibtex items. They can be easily found & exported from IEEE Digital Portal / ACM Digital Library (see below).

TexWorks (bundled with LiveTex anyway)

The screenshot shows two windows of the TexWorks application. The left window displays a LaTeX document with several sections and subsections, including 'Advanced refinement' and 'Disorder at special positions'. The right window shows a PDF document titled 'Crystallography-guide.pdf' with a section on 'Refinement'.

TexShop on Mac OSX

The screenshot shows a LaTeX code editor window for a file named 'costo.tex'. The code contains sections on 'Algoritmi basati sui confronti', 'Selection sort', and 'Insertion sort'. It includes pseudocode for selection sort and insertion sort algorithms. A mathematical formula for the complexity of selection sort is shown:

$$\sum_{i=0}^{n-2} (n-i-1) = \sum_{k=1}^{n-1} k = \frac{n(n+1)}{2} - n = \Theta(n^2)$$

The code also includes a note about the complexity of insertion sort:

Il calcolo della complessità del Selection sort è molto semplice: detta n la dimensione del vettore da ordinare, eseguiamo $n - i - 1$ confronti con $0 \leq i \leq n - 2$. Quindi abbiamo la sommatoria

$$\sum_{i=0}^{n-2} (n-i-1) = \sum_{k=1}^{n-1} k = \frac{n(n+1)}{2} - n = \Theta(n^2)$$

Per risolvere la sommatoria abbiamo fatto la sostituzione $k = n - i - 1$.

1.2 Insertion sort

```
void insertionSort(int *v, int n){
    int k,i,j;
    for(k=1;k<n;k++){
        int x=v[k];
        for(j=0;j<k;j++)
            if(v[j]>x)
                break;
        for(i=k;i>j;i--)
            v[i]=v[i-1];
        v[i]=x;
    }
}
```

The code editor has a circled 'Typeset' button in the toolbar.

Provides GUI, and you can change "pdflatex" "latex" to "bibtex" option.

Whatever you type, you can quickly see the pdf results.

Handy tools for Latex

Latex Equation Editor at (<https://www.codecogs.com/latex/eqneditor.php>)

Write, copy and paste your equation with ease for Latex.

The screenshot shows a web-based LaTeX equation editor interface. At the top, there's a toolbar with various icons for functions like BoldGreek, Upright, and mathematical symbols. Below the toolbar is a large input field containing the LaTeX code:

$$\sum_i \sum_j x_i^2 - 2x_{ij} + x_j^2$$

Below the input field, the rendered output is shown as:

$$\sum_i^K \sum_j^K x_i^2 - 2x_{ij} + x_j^2$$

At the bottom of the editor, there are options for file format (gif), font (Latin Modern), size (10pt Normal), and other settings.

Latex Table Editor at (<http://www.tablesgenerator.com/>)

Write, copy and paste your equation with ease for Latex.

The screenshot shows the LaTeX Table Generator tool. It has tabs for LaTeX Tables, HTML Tables, Text Tables, Markdown Tables, and MediaWiki Tables. The LaTeX Tables tab is selected. A table is being edited with columns labeled A, B, and C. The table rows contain data such as "Gnat per gram", "each", "Gnat stuffed", "Eggs stuffed", and "Armadillo frozen". Below the table, there are buttons for generating LaTeX code and a code editor showing the generated LaTeX code:

```

\begin{table}[h]
\caption{Item}
\begin{array}{|c|c|c|} \hline
 & A & B & C \\ \hline
 1 & Animal & Description & Price (\$) \\ \hline
 2 & Gnat & per gram & 13.65 \\ \hline
 3 & & each & 0.01 \\ \hline
 4 & Gnat & stuffed & 92.50 \\ \hline
 5 & Eggs & stuffed & 33.33 \\ \hline
 6 & Armadillo & frozen & 8.00 \\ \hline
\end{array}

```

At the bottom, there are buttons for "Generate" and "Copy to clipboard".

JabRef (Bibtex Reference Manager, free) at (<https://www.jabref.org/>).

Personally, I use Aigaion though :) (from <https://sourceforge.net/projects/aigaion/>)

The screenshot shows the JabRef application interface. The title bar says "JabRef - D:\TEMP\jabref-authors.bib (BibTeX mode)". The menu bar includes File, Edit, Search, Groups, View, BibTeX, Quality, Tools, Options, Help. The main window displays a list of bibliography entries in a table format. The columns are: #, entrytype, author/editor, title, year, journal/booktitle, bibkey, and ranking. The entries include various types like Article, Inproceedings, and Phdthesis, with details such as authors, titles, years, and publication information. The interface also includes a search bar at the top and a toolbar with various icons.

| # | entrytype | author/editor | title | year | journal/booktitle | bibkey | ranking |
|----|---------------|-----------------------|---|------|--|-------------------------------|---------|
| 1 | Article | Ganesh et al. | CORDIC: A New Improved CORDIC Algorithm | 2015 | IEEE Trans. on Circuits and S... | GaneshKallstromKummEtAl... | ★★★★★ |
| 2 | Inproceedings | Geiger et al. | On the Evolution of BPNN 2.0 Support and Implementation | 2015 | 10th International IEEE Symp., GeigerHamerLenhardEtAl2015 | | |
| 3 | Inproceedings | Geiger et al. | Process Engine Benchmarking with Betsy – Current Status and Future Directions | 2015 | Proceedings of the 8th Centr... | GeigerHamerLenhard2015 | |
| 4 | Inproceedings | Nikol et al. | Service-oriented Multi-tenancy (SO-MT): Enabling Multi-tenancy for Existing Servic... | 2015 | 10th International IEEE Symp., NikolTraegerHamerEtAl2015 | | |
| 5 | Phdthesis | Kopp | Padawan: Migrating Geschäftsprozesse und Ihre Realisierung in BPEL | 2015 | Kopp2015 | | |
| 6 | Article | Weddinger et al. | Streamlining DevOps automation for Cloud applications using TOSCA as standa... | 2015 | Future Generation Comp. Syst., WeddingerBreitenbuecherKop... | ★★★★★ | |
| 7 | Inproceedings | Geiger et al. | BPMN Conformance in Open Source Engines | 2015 | Proceedings of the 8th IEEE L... | GeigerHamerLenhardEtAl2015 | |
| 8 | Inproceedings | Hamer et al. | Improving the Static Analysis Conformance of BPEL Engines with BPELint | 2015 | Proceedings of the 8th IEEE L... | GeigerHamerPreisingerEtAl... | ★★★★★ |
| 9 | Inproceedings | Kopp et al. | A Domain-Specific Modeling Tool to Model Management Plans for Composite Ap... | 2015 | Proceedings of the 7th Centr... | KoppBitzBreitenbuecherEtAl... | |
| 10 | Inproceedings | Breitenbuecher et al. | A Modeling Concept to Integrate Declarative and Imperative Cloud Application Pr... | 2015 | CLOSER 2015 – Proceedings... | BreitenbuecherBittKoppEtAl... | ★★★☆☆ |

Finding References (IEEE Digital Portal)

The screenshot shows the IEEE Xplore Digital Library interface. At the top, the URL is ieeexplore.ieee.org/xpl/abstractCitations.jsp. The page title is "Registration of 3D Point Clouds and Meshes: A Survey from Rigid to Nonrigid". The search bar contains the same title. Below the search bar are buttons for "Basic Search", "Author Search", "Publication Search", "Advanced Search", and "Other Search Options". The main content area displays the paper's details: authors (Gary K. L. Tam, Zhi-Quan Cheng, Yu-Kun Lai, Frank C. Langbein), abstract, and a "Cited By" section. The "Cited By" section is highlighted with a blue oval. To the left of the main content, there is a sidebar with social sharing icons (Facebook, Twitter, LinkedIn) and download/print options. A "Download Citations" button is also circled in blue.

Registration of 3D Point Clouds and Meshes: A Survey from Rigid to Nonrigid

Basic Search Author Search Publication Search Advanced Search Other Search Options

9 Gary K. L. Tam ; Cardiff University, Cardiff ; Zhi-Quan Cheng ; Yu-Kun Lai ; Frank C. Langbein more authors

Abstract Authors References Cited By Keywords Metrics Similar

15 Citations IEEE Publications (15) Citation Map

Cited by IEEE Publications (15)

1. Xun Yu; Yongsheng Gao; Jun Zhou "A 3D Polygonal Line Chains Matching Method for Face Recognition", *Digital Image Computing: Techniques and Applications (DICTA), 2013 International Conference on*, On page(s): 1 - 6
Abstract | Full Text: PDF (550KB)
2. Hattab, A.; Taubin, G. "3D Modeling by Scanning Physical Modifications", *Graphics, Patterns and Images (SIBGRAPI), 2015 28th SIBGRAPI Conference on*, On page(s): 25 - 32
Abstract | Full Text: PDF (766KB)
3. Min Lu; Jian Zhao; Yulan Guo; Yanxin Ma "Accelerated Coherent Point Drift for Automatic Three-Dimensional Point Cloud Registration", *Geoscience and Remote Sensing Letters, IEEE*, On page(s): 162 - 166 Volume: 13, Issue: 2, Feb. 2016
Abstract | Full Text: PDF (1822KB)
4. Shiratori, T.; Berclaz, J.; Harville, M.; Chintan Shah; Taoyu Li; Matsushita, Y.; Shiller, S. "Efficient Large-Scale Point Cloud Registration Using Loop Closures", *3D Vision (3DV), 2015 International Conference on*, On page(s): 232 - 240

Getting Bibtex for Latex

The screenshot shows the IEEE Xplore Digital Library interface with the "Download Citations" dialog box open. The dialog box has a blue header "DOWNLOAD CITATIONS". It includes sections for "Include:" (with radio buttons for "Citation Only" and "Citation & Abstract", where "Citation Only" is selected) and "Format:" (with radio buttons for "Plain Text", "BibTeX" (which is selected), "Risworks", and "EndNote, ProCite, RefMan"). There are "Download Citation" and "Cancel" buttons at the bottom. The background shows the "Cited By" section of the paper details.

Abstract Authors References Cited By

Download Citations

Include:
 Citation Only
 Citation & Abstract

Format:
 Plain Text
 BibTeX
 Risworks
 EndNote, ProCite, RefMan

Download Citation Cancel

Abstract | Full Text: PDF (550KB)

Finding References (ACM Digital Library)

← → C ⌘ dl.acm.org Press Tab to search dl.acm.org

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ACM DL DIGITAL LIBRARY

Decoupling noise and features via weighted ℓ_1 -analysis compressed sensing

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see source materials below for more options

Authors: [Ruimin Wang](#) University of Science and Technology of China, Hefei, Anhui, China
[Zhouwang Yang](#) University of Science and Technology of China, Hefei, Anhui, China
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Published in:
 Journal
ACM Transactions on Graphics (TOG) [TOG Homepage](#) archive
Volume 33 Issue 2, March 2014
Article No. 18
ACM New York, NY, USA
[table of contents](#) doi:>[10.1145/2557449](https://doi.org/10.1145/2557449)

2014 Article
• Research
• Refereed

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- Downloads (12 Months): 153
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- Citation Count: 9

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Abstract Source Materials Authors References **Cited By** Index Terms Publication Reviews Comments Table of Contents

9 Citations

[Linlin Xu, Ruimin Wang, Juyong Zhang, Zhouwang Yang, Jiansong Deng, Falai Chen, Ligang Liu, Survey on sparsity in geometric modeling and processing, Graphical Models, v.82 n.C, p.160-180, November 2015](#)

[Xiaoguang Wu, Jianmin Zheng, Yiyu Cai, Chi-Wing Fu, Mesh Denoising using Extended ROF Model with L1 Fidelity, Computer Graphics Forum, v.34 n.7, p.35-45, October 2015](#)

[Xiaochao Wang, Jianping Hu, Dongbo Zhang, Hong Qin, Efficient EMD and Hilbert spectra computation for 3D geometry processing and analysis via space-filling curve, The Visual Computer: International Journal of Computer Graphics, v.31 n.6-8, p.1135-1145, June 2015](#)

[Wanyu Zhang, Ballin Deng, Juyong Zhang, Sofien Bouaziz, Ligang Liu, Guided Mesh Normal Filtering, Computer Graphics Forum, v.34 n.7, p.23-34, October 2015](#)

Getting Bibtex for Latex

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```
@article{Wang:2014:DNC:2603314.2557449,
author = {Wang, Ruimin and Yang, Zhouwang and Liu, Ligang and Deng, Jiansong and Chen, Falai},
title = {Decoupling Noise and Features via Weighted  $\ell_1$ -analysis Compressed Sensing},
journal = {ACM Trans. Graph.},
issue_date = {March 2014},
volume = {33},
number = {2},
month = apr,
year = {2014},
issn = {0730-0301},
pages = {18:1--18:12},
articleno = {18},
numpages = {12},
url = {http://doi.acm.org/10.1145/2557449},
doi = {10.1145/2557449},
acmid = {2557449},
publisher = {ACM},
address = {New York, NY, USA},
keywords = {\ell_1-analysis compressed sensing, Denoising, asymptotic optimality, sharp feature},
}
```

[download]

References

Not all references are equally important. Read these papers from top conference / journals first. Prioritize your time.

Top Ranked Conferences:

[Computer Graphics]

Top Tier:

SIGGRAPH conference
SIGGRAPH ASIA conference
Eurographics (EG)

2nd Tier:

Pacific Graphics (PG)
Symposium on Geometry Processing (SGP)
Computer Graphics International (CGI)
Symposium on Solid & Physical Modeling (SPM)
Shape Modeling International (SMI)
Virtual Reality Software and Technology (VRST)

[Computer Vision]

Top Tier:

Computer Vision and Pattern Recognition (CVPR)
International Conference on Computer Vision (ICCV)
European Conference on Computer Vision (ECCV)

2nd Tier:

British Machine Vision Conference (BMVC)

[Visualization]

Top Tier:

IEEE Visual Analytics Science and Technology (VAST)
IEEE Information Visualization (InfoVis)
IEEE Scientific Visualization (SciVis)

2nd Tier:

Eurographics Conference on Visualization (EuroVis)
Pacific Conference on Visualization (PacificVis)

Good Journals / Transactions:

IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI)

International Journal of Computer Vision (IJCV)

ACM Transactions on Graphics (TOG)

IEEE Transactions on Visualization and Computer Graphics (TVCG)

Pattern Recognition (PR)

Computer Graphics Forum (CGF)

(Come here and see citation reports, narrow down by computer science in "category")

Journal Citation Reports - Thomson Reuters

<https://jcr.incites.thomsonreuters.com/>



How to do Literature Search & Reading?

For each publication / paper / product you read:

Summarise in one paragraph, roughly 5-6 sentences what it is about.

- Research Question? Why important?
- The idea / hypotheses?
- The novelty, contribution
- The technique / method
- Results
- Evaluation methods

Provide a summary of all these, categorise into table.

Show that your new ideas (projects) are really novel (making contributions) to a better world.

Part V: Report Structure

Good document is all about the flow.

General Document Outline (Final Dissertation)

Initial, interim and final report are similar, except some items are not necessary in initial report.
For example, there is clearly no "Evaluation, Future Work, Appendix" section in the initial report.

From 2019/20 onwards, there will be page limit for all documents. Be warned. Use mindmap to plan.
Prepare to use latex template.

Abstract

Abstract should be a summary of the whole dissertation. It should be written **AFTER** the whole document is completed. Resist to write it now. I leave the descriptions of abstract to the end of this part.

Introduction

- **5-7 paragraphs**
- Project description
 - What this project is about? Please (remind!) the 2nd markers again.
- Motivation
 - Why this project is important, significant, and worth putting time?
 - What applications would this project benefit? List them with references.
 - Who can this project benefit?
- Provide a summary of existing literature
- Then indicate:
 - the problems you find in these existing literature (lack of features, data? None do what you want...)
 - challenges none existing methods can handle
- From the above problems/challenges, tell what are your new insights / novel ideas
 - That's the contribution of your project (no matter big or small).
 - E.g. something novel, and no one has done before; or generating a new challenging dataset
 - Essentially, show that the project contributes to a better world.
- Project specification
 - Overall aims in bullet points (evaluable goals) (
 - Use incomplete sentences
 - Separate into basic and advanced goals.
 - How are you going to evaluate your goals (e.g. quantitative measure, user studies).
 - (tip for high marks) ?)
- In final dissertation, mention the results you have got, and indicates the **significance** of the project.
- Last paragraph, end the introduction by signposting, say:
"In Section 2, we will explore the background. In Section 3, we will... In Section 4, we will..."

Background (for subsequent report, update if anything new)

- Your target audience is a **2nd year student**. You can mention that these materials are NOT taught in year2.
- Main purpose: Top up the audience with brief background knowledge, so that they can follow
- any interesting non-technical history of the project? (e.g. the history of Sudoku? Puzzle solving?)
- if it is a highly technical or mathematical related project, provide a primer, and tell what are they?
(e.g. OpenGL shader Primer, Linear Algebra Primer etc.).
- If you are building on some mathematics theory? tools?
(e.g. scientific definition => use mathematical symbols! => learn latex)
(e.g. theory of random walk, graph theory?)
- if you are developing an App for tracking, then discuss the building components you need
 - discuss the Library available for developing App
 - discuss vision, tracking theory, mathematics model etc.
- if you are developing a new 3D segmentation algorithm
 - discuss what techniques your project will build on (you are not developing anything new here)
 - e.g. k-mean clustering

- o e.g. integer programming, gradient descent optimization etc

Related work (for subsequent report, update if anything new)

- This is NOT background
- Main purpose of Related Work: show that the contributions mentioned in the Introduction is genuine.
- Survey ALL similar and relevant work in the same area.
- include work that your project is following
- e.g. if you are developing an App for tracking, then survey all tracking App that have similar functionality
 - o App1 does features a, b, c
 - o App2 provides features b, c, d
 - o App3 provides features a, d
- e.g. if you are developing a new 3D segmentation algorithm, then survey all segmentation algorithm
 - o research1 does / use features a, b, c
 - o research2 does features a, b, c, d, e
 - o research3 provides features c, d
 - o research4 provides features a, c, e
- Even better, classify them according to the components, say
 - o input data
 - o output data
 - o specific feature / architecture used
 - o specific optimization techniques used
 - o specific learning techniques used
- provide a classification (in table) - techniques that are similar, and draw a table for them, from there you can identify **contributions** – something no one has done before.
- Then indicate what **problems** these techniques have, and that they cannot handle what we can handle.
- Finally, from your classification, support yourself why your project has the contributions you indicated in the **introduction**. Where is the novelty? why the world is better? How it advance science by new knowledge?

| | | 1 | 1 | 16 | 1 | 1 | 16 | 1 | 1 | 1 | 0 | 14 | 0 | 1 | 0 | 16 | 13 | | |
|--------------|-------------------|---|---|----|---|---|----|---|---|---|---|----|---|---|----|----|----|----|----|
| | | 3 | 4 | 5 | 3 | 5 | 4 | 6 | 7 | 8 | 9 | 1 | 1 | 1 | 13 | 7 | 1 | 17 | 18 |
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 1 | 1 | 1 | 1 | 13 | 4 | 5 | 6 | 15 |
| Bar | Bar Graph | | | | | | | | | | | | | | | | | | |
| Area | Stacked Graph | | | | | | | | | | | | | | | | | | |
| | Streamgraph | | | | | | | | | | | | | | | | | | |
| Circle | Pie chart | | | | | | | | | | | | | | | | | | |
| | Radial chart | | | | | | | | | | | | | | | | | | |
| | Strings and Beads | | | | | | | | | | | | | | | | | | |
| Distribution | Histogram | | | | | | | | | | | | | | | | | | |

| | | 1 | 1 | 16 | 1 | 1 | 16 | 1 | 1 | 1 | 0 | 14 | 0 | 1 | 0 | 16 | 13 | 1 | 1 | 16 | | |
|----------|-----------|---|---|----|---|---|----|---|---|---|---|----|---|---|----|----|----|----|----|----|---|----|
| | | 3 | 4 | 5 | 3 | 5 | 4 | 6 | 7 | 8 | 9 | 1 | 1 | 1 | 13 | 7 | 1 | 17 | 18 | 1 | 1 | 16 |
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 1 | 1 | 1 | 1 | 13 | 4 | 5 | 6 | 15 | 1 | 1 | 16 |
| Analysis | consume | | | | | | | | | | | | | | | | | | | | | |
| | Produce | | | | | | | | | | | | | | | | | | | | | |
| search | lookup | | | | | | | | | | | | | | | | | | | | | |
| | browse | | | | | | | | | | | | | | | | | | | | | |
| | locate | | | | | | | | | | | | | | | | | | | | | |
| | explore | | | | | | | | | | | | | | | | | | | | | |
| query | identify | | | | | | | | | | | | | | | | | | | | | |
| | compare | | | | | | | | | | | | | | | | | | | | | |
| | summarize | | | | | | | | | | | | | | | | | | | | | |

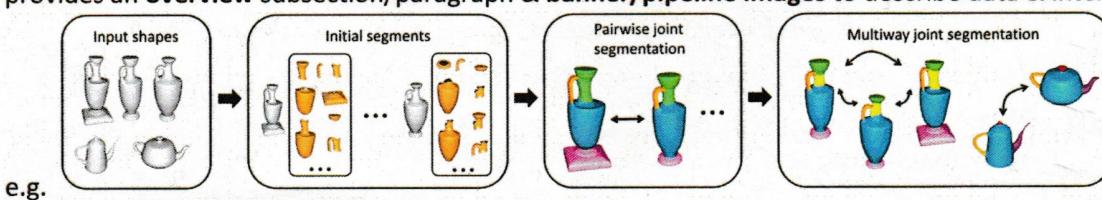
Use grid like above or use tick. Your tool should be the one that has most of the tick, or support a feature no one has done before.

Tip, where to find references?

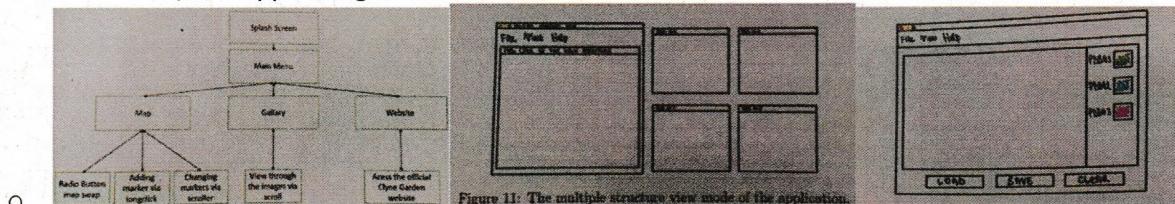
- Google it.
- Citing references from latest academic publications {tips for high marks}
- If you are given a paper to follow, read the related work section, and look up all references therein
- Two easy places: IEEE Digital Portal, ACM Digital Library (free access from campus or vpn <http://vpn.swansea.ac.uk/>)
- Check the Cite-By section to look for follow-up work (see above).
- if your related work is not thorough (e.g. markers can find similar project), that's the idea is not novel enough => marks are intrinsically capped => not publishable quality (see marking scheme).

Method / Implementation

- provides an overview subsection/paragraph & banner/pipeline images to describe data & interaction flow



- For each component in the pipeline images, create a separate subsection and discuss what you did.
 - project ideas? (anything new? novel?)
 - how you implement it?
 - discuss clearly what tools / library you have used.
 - discuss clearly what is your main contributions - the programming bits.
 - use lots of images to show your progress, before and after, the difference etc.
- If you use any tool but not discuss or cite them:
 - marker will assume all functionality is provided by the tool => low marks
 - and you simply CALL the library without doing anything => low marks
 - tell the markers it is not the case; you have implemented a lot.
- Design (if you are building applications)
 - GUI sketch, and Apps Navigation should be mentioned.



Results (Initial works or Progress so far in earlier report)

- must have lots of images / screenshots etc
- plenty of images
- show the usage of software
- upload videos to youtube, put the (shortened URL) links in your report

Risks (for subsequent report, revision expected, a must to have)

- Main purpose: convince the 2nd marker that you can complete all goals & on time.
- => show that you can forecast what troubles may happen and can develop mitigation strategies to solve them.
- Type of risks:
 - personal risks (e.g. time management)
 - project risks (hardware / bugs / management)
 - technical risks (library / solution)
- [Technical risk]
 - look into each component in the pipeline.
 - break project into as small task as possible (total 20-30 tasks)
 - identify risks in each task
- Use [likelihood, consequence] matrix
 - prioritize tasks with higher likelihood x consequence => reflect that in the Schedule
 - prioritize & plan tasks in the above Gantt Chart! and explain here.
- mitigation strategies for each (e.g. alternative libraries, alternative strategies)
- Reserve buffer time

Schedule (for subsequent report, revision expected, must have)

- Main purpose: convince the 2nd marker that you can complete all goals & on time => that's schedule is realistic
- break project into as small task as possible (20-30 tasks)
- Categorise & Sorted them under 4-5 categories of big tasks / milestones
- "Preparation for dissertation, initial reports, presentation" should be under **one** category.
- Use Gantt chart (landscape, full page), see image later.
- The tasks should be arranged in descending order of [likelihood x consequence]. The riskier task does first.
- Use artificial data to make sure it works.
- You need not complete the project from the beginning to finish. If get stuck, jump to another part.
- Revised new milestones

Software Development (for subsequent report, changes are expected, must have, no matter you are in SE or not)

- software development (never use waterfall!!!)
- development cycle

- For SE students, put more emphasis on this:
 - ⇒ You have fulfilled all goals with a proper tick
 - ⇒ You have met all milestones (if some milestones dropped, changed, delayed, discuss why and how you recover.)
 - ⇒ Failure to meet milestones is a SIN in SE. Be very careful how you word it.

Testing {Tip to achieve high marks in final dissertation, a **MUST** for SE student}

- The more the better: Unit Test, Integration Test, System Test, Acceptance Test, Visual Test.
- Show some examples.
- what other tests you have tried to make sure it produces correct results?
- show some images that you have done (at least one for each of the test)
- for CS students, a few brief examples are okay.

Evaluation {tips to achieve higher marks in final report}

- Define ways to measure the performance of your tool
- Qualitative measure [simplest way]:
 - ⇒ develop a questionnaire (asking questions like, how is it compared to existing tools? Has it achieved xxx / the goals? What do you like or dislike? What can be done further etc?). Show the questionnaire.
 - ⇒ Get 3x people (e.g. classmates, not you) to use it, and list out all comments.
 - ⇒ Show and discuss the feedback, providing your materials for reflection section and future work section.

| Question | Participant 1 | Participant 2 | Participant 3 | Participant 4 | Participant 5 | Participant 6 |
|---|-----------------------------|---------------|---------------|---------------|-------------------|---------------|
| Have you heard of Augmented Reality before? | No | Yes | Yes | Yes | Yes | Yes |
| Have you used any Augmented Reality applications? | N/A | Yes | Yes | Yes | Yes | Yes |
| Would you describe your interactions with them as positive or negative? | N/A | Positive | Negative | Positive | Somewhat Positive | Negative |
| Have you worked with Circuit diagrams before? | Yes | Yes | No | Yes | Yes | Yes |
| Did you find the demo you just saw easy to use? | Somewhat | Yes | Yes | No | Yes | Yes |
| Are there any improvements you think that could be made to it? | Instructions on the screen. | No | Performance | More symbols | More responsive | No |

- Quantitative measure [sophisticated way, higher marks if done properly]: evaluate it properly - check literature for proper measure (e.g. user response time, user ratings, accuracy measure, precision & recall, ROC curves.)
 - ⇒ Show, compare and discuss, and then draw conclusion from the experiments!
 - ⇒ Another example, plot and show the time curve, vs the complexity analysis (Big-O).
- Next, use all these experiments to **support** your claims (e.g. our idea is BETTER, FASTER, MORE RELIABLE etc).
 - ⇒ Be clear how your claims arrived.
- Note, for final year project, it is totally fine if the evaluation is not showing good results or the results are not as good as expected.
 - ⇒ Given limited time, it is understandable.
 - ⇒ But you must provide insights, observations and discussions **WHY** the results look bad or inconsistent and must suggest ways to investigate as future work.
 - ⇒ That is to show what you have LEARNT in this scientific research.

Challenges (if any)

- Practical challenges you discovered.
- Discuss the challenges you face in more details
- Be very specific and clear. Otherwise, markers will simply assume it is a VERY project easy (presumption).
- If you cannot finish the project or achieved the stated milestones, this is important for not failing.

Reflection {tips: would help to achieve higher marks in final dissertation, may help if you are failing some tasks}

- How would you like to do it differently from scratch?
- Time management?
- Project management?
- If you fail to fulfill some aims, you can minimize marks loss by doing a good reflection.
- No matter how good your project is, there must be reflection - this is the whole point of a 3rd year project.
- What have you learnt? Any mistakes you made? what risk / mitigation strategies will you consider in the future?
- Show me that you are getting matured!

- Show me that you can now be trusted to handle a bigger project!

Future work

- If you are given more times:
 - Say, in a few weeks: What would be the minor tweaks or aims that you cannot complete? But can be done in another month.
 - Say, 1 year: new directions (not minor tweaks) if you are given "another whole year" on it?
 - What can be explored? new ideas from your own, not your supervisor?
- Surprise us with your passion!

Conclusion

- Retell & summarise what is the project about?
- Is the world really better afterward?

References

Use latex, it helps. Otherwise, use Word reference manager. They must be in a proper format, better using numerical numbering (IEEE / ACM), with authors name, title, (volume, number,) pages, published journal / conference, and year. For journal, volume and number is often required.

[18] M. Burch and S. Diehl. TimeRadarTrees: Visualizing dynamic compound digraphs. In *Computer Graphics Forum*, volume 27, pages 823–830. Wiley Online Library, 2008.

For URL reference, provide last access date.

[10] A. Hafizji, "How to create a game like tiny-wings with Cocos2D 2.x," 18 May 2013. [Online]. Available: <https://www.raywenderlich.com/32954/how-to-create-a-game-like-tiny-wings-with-cocos2d-2-x-part-1>. [Accessed 20 October 2016].

Appendix

- Put codes here if you want to.
- Markers do not want to see source code. Only the necessary code snippet or algorithm, if necessary.
- In final dissertation, put source codes and dissertation copy in a CD/USB (whichever is cheaper) and physically attached it to the hardcopy.
- Markers PREFER to see algorithm, e.g. use Latex package, for example, algorithm2e (see latex section above)

Abstract

Abstract should be a summary of the whole dissertation. It is the last part to be written **AFTER** all sections are completed. There should be say 8-12 sentences in the abstract, including the following:

1-2 sentences: Project description (e.g. What is Jigsaw puzzle? and you want to solve it automatically?)

1-2 sentences: Motivation of the project, shows its applications / complexity / challenges,

1-2 sentences: Indicates the problems / gaps identified in related work,

1-2 sentences: Say your ideas and hypothesis, showing your contributions (novelty) that differ from previous works,

1-2 sentences: Results, the product, supporting it with some evaluation statement (the robustness / vigour)

1-2 sentences: Briefly conclude, showing your success / lessons learnt (answer: what is the significance of the project? How it improves the science / the world?)

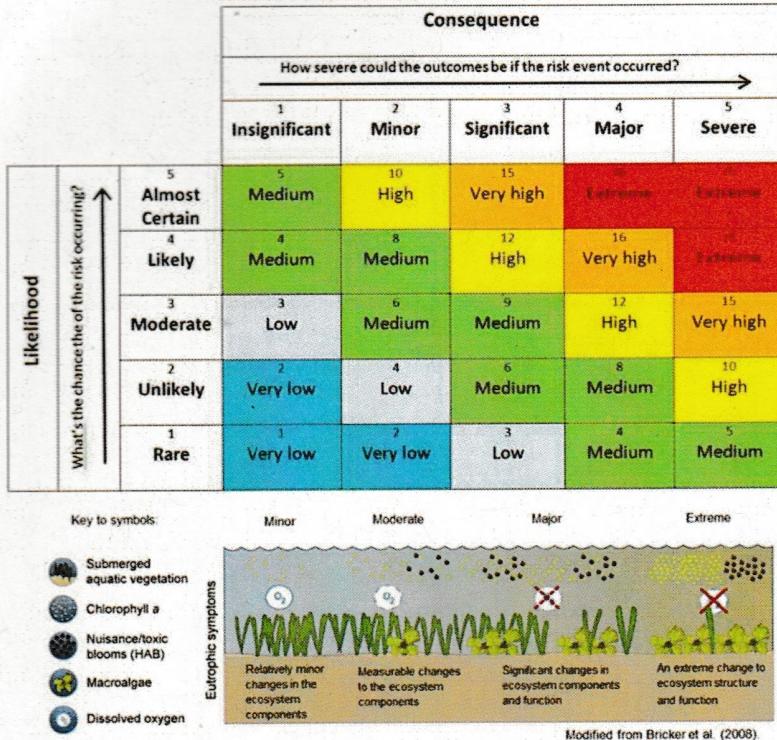
Expectation - This only applies to my projects!

Top scoring project & final dissertation (first class or higher), you should expect:

For research-oriented projects (dealing some interesting but small research project), you are looking into 55-65 pages without references, and 30-60 entries of references. Only research-oriented projects are able to go above 85, in my opinion (remember: publishable quality, see marking scheme). SE project can go above 85 if there is research component.

For market-oriented projects (building apps), you are looking into 45-50 pages without references, and 20-30 entries of references. Market-oriented projects often score around 70-75, in my experience, unless a research component is clearly shown.

Risk Assessment



| RISK MATRIX (LIKELIHOOD X CONSEQUENCE) | | CONSEQUENCE (changes on the trophic conditions as a consequence of nutrients inputs) | | | |
|---|---|---|--|---|---|
| LIKELIHOOD (probability of suffering MAJOR changes in the trophic conditions as a consequence of nutrient inputs in the following 5 years) | Minor (1) | Moderate (2) | Major (3) | Extreme (4) | |
| | <i>Objective: To maintain the trophic conditions within acceptable levels.</i> | | Relatively minor changes in the ecosystem components. It is unlikely that there would be any measurable changes at whole or trophic levels outside of natural variation. | | An extreme change to ecosystem structure and function. Could lead to total collapse of ecosystem processes. |
| | Likely (4) | Low-Risk (4) | Moderate-Risk (8) | High-Risk (12) | High-Risk (16) |
| | It is expected to occur with a probability of 40 - 100%. | | No specific management action required. Full Justification. | Specific Management/ Monitoring needed. Full Performance Report. | Increased management actions required. Full Performance Report. |
| | Possible (3) | Low-Risk (3) | Moderate-Risk (6) | High-Risk (9) | High-Risk (12) |
| | It is possible and may occur in some circumstances, with a probability of 10 - 35%. | | No specific management action required. Full Justification. | Specific Management/ Monitoring needed. Full Performance Report. | Increased management actions needed. Full Performance Report. |
| Unlikely (2) | No-Risk (2) | Low-Risk (4) | Moderate-Risk (6) | Moderate-Risk (8) | |
| | It is not expected to occur but it has been known to occur. Probability of 2 - 10%. | | No specific management action required. Brief Justification. | Specific Management/ Monitoring needed. Full Performance Report. | Specific Management/ Monitoring needed. Full Performance Report. |
| Remote (1) | No Risk (1) | No-Risk (2) | Low-Risk (3) | Low-Risk (4) | |
| | It has never occurred in these circumstances, but it is not impossible. Probability < 2%. | | No management action required. Brief Justification. | No specific management action required. Brief Justification. | No specific management action required. Full Justification. |

Note:

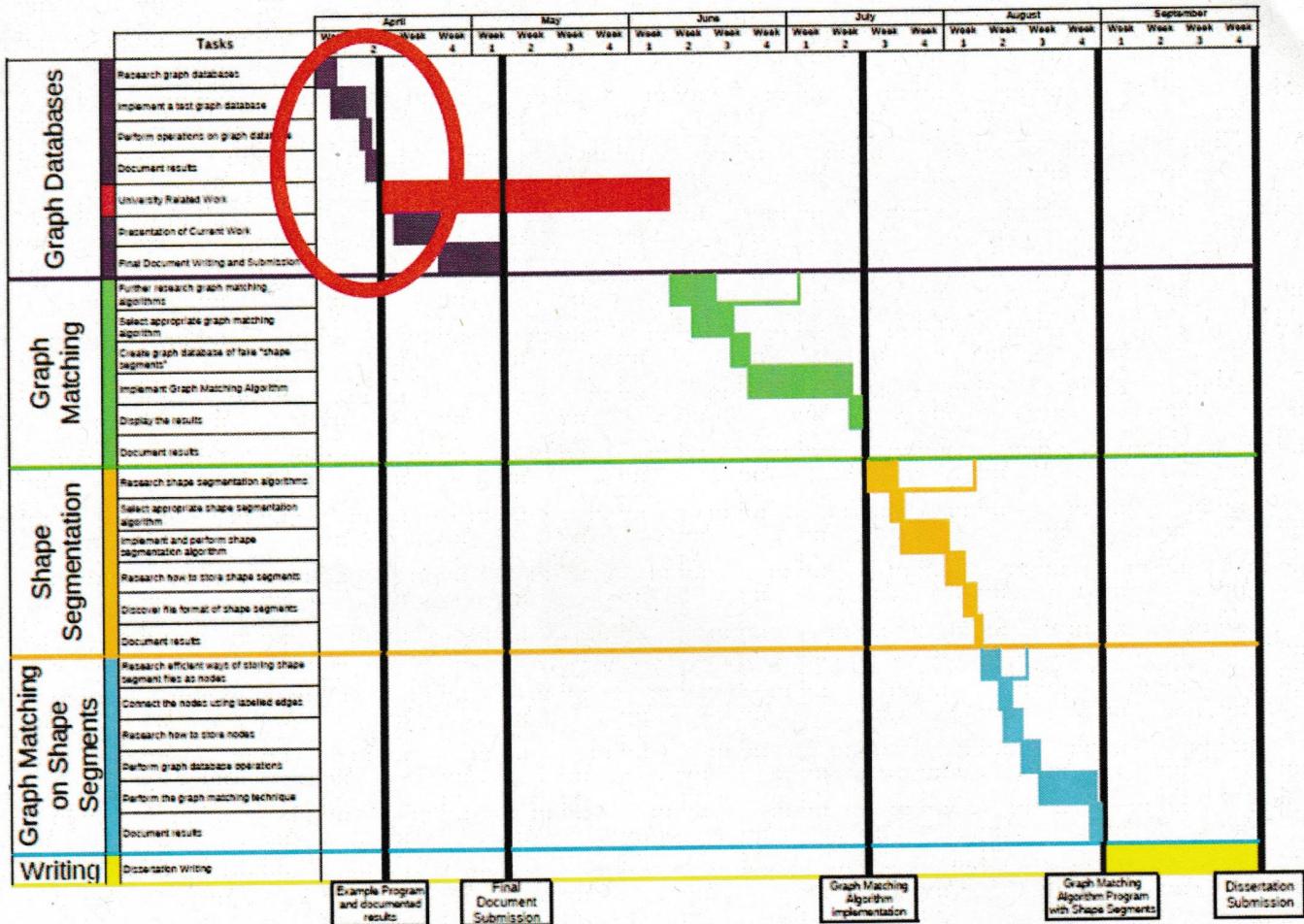
Multiple likelihood and consequence into a number.

Sort all subtasks by decreasing numbers (i.e., higher risk first).

List them in table.

Arrange risky items to go early in your schedule, and show it in Gantt Chart

Gantt Chart (MS Excel can do the job)



High level tasks (components related to the pipeline), indication on milestone & for evaluation.

Low level => **20-30 subtasks** expected.

Writing, Presenting, etc all should be one category.

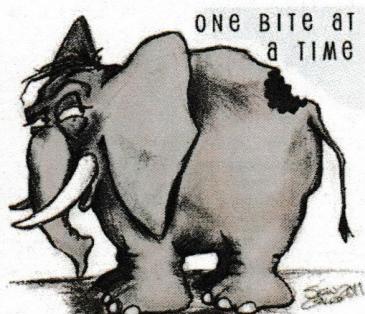
Also plan time to: **rest!!!, holiday, sickness, revision, coursework, exam, reserve buffer time.**

Reserve time each week for the project. Carry out the project bits by bits, and be consistent. For example, every 30-60 minutes a day, for 6 days.

Manage yourself and your supervisor!

Tip1 : Regarding your reports:

- **20 days** before deadline, send me to get comments of the **structure**
 - o Use MindMap (e.g. XMind). Arrange all your sections, and ideas that you would like to put in there.
 - o Send me the **xmind file**. This is the structure I will check!
- **7-14 days** before deadline, you can send **partial drafts** to me to get feedback. (**not 1 day before deadline!**)
 - Remember, the **partial draft** should arrive at least 1 week before deadline. Otherwise I will not have time to read it: a) I have many work commitments (teaching, admin and research); b) I have more than 10 students!
 - **Do not wait until the document is finished.** As always, there will be great changes suggested from me.
 - The students, who followed my deadlines set above, often get 80 in their reports.
 - You can send me multiple times, but I prioritise my time to feedback to each student at least once.
 - For quick feedback, I will only read your topic sentences, not the full document.



Tip2: Start your project in summer.

- Past experience: if you do nothing in the summer, your final scores will **likely go below 65**. You are warned.
- Past experience: Aim high. **Not for scores**. To show your future employers your ability to handle challenges!

MSc Project Dissertation Marking Grid

| | | | | | | |
|--|---|--|--|---|--|---|
| Demo/Viva | Clear Fail (<35%) | Fail (35-49%) | Pass (50-59%) | Merit (60-69%) | Distinction (70-85%) | High Distinction (>85%) |
| | No meaningful results presented; Student unable to answer most of questions asked | Minimal results presented; Student unable to answer many of questions asked | Basic software or results demonstrated; Student able to give sensible answers to most straightforward questions | Functioning software with minimal flaws or detailed results presented; student able to answer well all straightforward questions asked and attempted to answer more probing questions | Functioning software with virtually no flaws or detailed and potentially useful results presented; student able to answer well most questions asked | Fully functioning software or detailed and useful results presented; student able to answer well all questions asked |
| Technical Competence | Evidence of some work on the design and/or the development of the project, but minimal progress, and nothing in a final state yet; just some components in a state where they can be tested independently. If the student has had to learn anything, there is no evidence that he/she has managed to use it to do anything related to the project. | Results and/or software little more than basic combination of existing results or packages; The design may have been completed (after a fashion) but it will not be a very large or very complicated project. The development will certainly not be complete. Overall a student at this level will have achieved relatively little. | Results and/or software produced which required some input from student to develop; design and development of a relatively straightforward project completed involving some creativity from the student. Testing is minimally convincing. May not be sufficiently complete to use, or design might show fairly obvious flaws, or there may be evidence of bugs which would render it unfit for use. | Software marketable, or results produced publishable, with some limited further shortcomings; This project has produced something solid and convincing which works/make sense and shows a clear level of competence and some level of creativity, but may not be impressive and there may be ways in which it could be improved. Size and complexity of the task was substantial, but well within the usual capabilities of an MSc project. There may be some questionable design decisions, and testing, where appropriate, may have some weaknesses. | Software marketable, or results produced publishable, with some limited further work; The student has designed and developed an impressive, substantial project which could be the core of a publication. Considerable creativity, independence, and originality went into this project: the result is impressive. The student has demonstrated a full awareness of the research context and relates well his/her product to currently available products in this area. | Marketable software or publishable results produced; The student has designed and developed an impressive, substantial project which could be the core of a publication. Considerable creativity, independence, and originality went into this project: the result is impressive. The student has demonstrated a full awareness of the research context and relates well his/her product to currently available products in this area. |
| Survey of relevant material | Inadequate review of relevant material; No evaluation of previous work | Inadequate review of information with limited evaluation of material reviewed | Adequate review of information from readily accessible sources; Some evaluation of material reviewed | Information review includes material from a wide range of sources and has been evaluated in a sensible and coherent way | Comprehensive review of relevant material; Informed evaluation of previous work | Extensive independent research; Familiarity with all relevant material; Thorough evaluation of previous work |
| Theoretical Background | Virtually no evidence of understanding of relevant theoretical background | Inadequate grasp of relevant theoretical background | Adequate grasp of relevant theoretical background | Good understanding of theoretical background | In depth understanding of theoretical background and ability to apply it in a constructive fashion | |
| Innovative Aspects; Completeness of Project | No evidence of innovation; Insignificant work completed | Minimal work completed; Mainly re-recycling existing work | Evidence of student input into project which may involve substantial elements of existing work | Good project demonstrating some original work by student | Evidence that understanding of background has made a contribution to work done Substantial work completed demonstrating significant original student contribution | Clear evidence of original thinking contributing to final project |
| Design, Planning & Implementation | Project area not clearly defined; Scant analysis of problem / design; Poor theory/design/software; Testing virtually non-existent | Inadequate planning; Minimal evidence of design decisions; Poor implementation / testing | Sensible plan with some evidence of alternatives considered; successful implementation | Evidence of coherent planning strategy with design alternatives considered; successful implementation with some testing | Clear introduction / definition of project executed implementation; Extensive testing, but some outstanding issues | Detailed analysis / methodical design Thorough implementation / testing |
| Documentation | Poorly organised report; Inadequate style / grammar; Poor referencing / tables / diagrams; | Inadequate presentation of work done with some expected material omitted; Barely reproduces existing literature; | Diligent presentation of work done with few flaws, but lacking in any critical appreciation of subject | Well organised report with high standard of grammar, referencing etc; A highly satisfactory piece of work, but with identifiable unfulfilled potential | Sensibly organised subdivided material; Flawless grammar; Relevant, clearly presented, valid material | Dissertation written to a professional standard which could lead to publishable journal paper with appropriate editing and minor revisions; Independent writing exceeding expectations |
| Evaluation of Project Supervisor's comments | Vacuous evaluation of work done; Poor focus / shallow conclusion Unsatisfactory attendance; Failed to follow instructions | Limited evaluation | Adequate evaluation against minimal, obvious criteria done Followed guidance given and displayed limited initiative | Good evaluation against a range of criteria presented Displayed initiative, but required some guidance to avoid obvious problems | Critical evaluation presented with conclusions clearly drawn Required minimal guidance and initiated tasks independently | Rigorous critical evaluation Conclusions summarised with acumen Industrious / independent worker; Took into account guidance offered |
| Overall Standard | Student has failed to demonstrate any significant progress in their project work | Required comprehensive instruction | Limited evidence of progress; Only minimal software produced; limited discussion of topic; poorly presented dissertation which fails to demonstrate understanding of work done | For practical projects no major errors in software; Dissertation explains main ideas in implementation or describes basic aspects of theory used; some awareness of related work, but minimal evaluation | For practical projects fully functioning software; design decisions and awareness of alternatives discussed; Project approach and progress clearly explained with significant evaluation of results in the context of related work | Software produced is of marketable standard, and/or the work done has made a contribution to the explanation/understanding in the project area including the evaluation of the work done in the context of related work, and/or project has required the student to undertake significant independent learning of material not covered in their prior studies in order to complete the project |

Dissertation Marking Criteria

Computer Science (from Professor Harold)

| UG | PG | Level | Challenge / risk | Understanding | Skills | Critical Analysis | Reflection |
|----|----|---|--|--|---|---|--|
| | | Postgraduate: ideas partly or entirely of publishable quality, perhaps with editorial help from an experienced coauthor. | Recognition of calibrated challenge, for example of cited literature defining the problem as unsolved. Examples of mitigating, avoiding or transferring risk. | Clear evidence of applying and interrelating relevant knowledge. Strong internal relations, e.g., of theory to practice as appropriate. Extensive, appropriately used background material. Potential new or extended knowledge. | Clear ability to select appropriate techniques and skills to solve a problem. High literacy and coherent organization of the coursework. Strong evidence of largely independent, self-directed work. | Original ideas, insights or critical thinking. Clear analysis and construction of arguments. Critical use of relevant techniques and synthesis of ideas. Strong structure. | Strong element of self-awareness and calibrated, critical evaluation of own work. Assessment of contribution to field of study. Realistic further work plan. Evidence of review with peers. |
| | | Undergraduate: ideas partly or entirely usable for teaching, perhaps with help. | Evidence of explicit risk management and planning using recognized or appropriately explained methodologies. | Significant explicit application of knowledge to problem. Thorough grasp of concepts. Good relation of theory to practice. | Good ability to select appropriate techniques and skills to solve a problem. | Good analysis and critical arguments. Good structure. | Self-evaluation and assessment of value of contribution. Justified opinions. Objective justifications of opinion. |
| | | Reasoned and evidence-based thinking. Own work engages with field beyond taught material. | Success impossible without some innovation that is documented. Some novel work required. | Organized evidence that relevant techniques have been used. Evidence of some relation of theory to practice. Ideas clearly going beyond background. | Good literacy and reasonable organization. Evidence of own initiative and independent work. | Occasional uncritical reliance on accepted arguments. | Reasonable critical further work section. Some assessment of impact or relevance of key achievements. |
| | | Good attention to detail and presentation. | Project has little risk or interdependencies. Routine work will complete project. | Some ability to apply knowledge and identify appropriate concepts. Some relevant background material. | Limited selection of techniques or skills. Some problems with language and attempts to organize ideas. Considerable guidance or direction given. | Informed evaluation of facts but no real independent analysis. Reasonable structure and argument. | Incomplete or sketchy evaluation of work. Opinionated, without justification. |
| | | Journalism, opinion, little development beyond representation of taught material or notes. | Recycling irrelevant or sub-standard material, such as undergraduate level material submitted at postgraduate level. | Textbook/online answers available for most issues. | Poor or inappropriate choice of skills. Poor language. Incoherent organization. Little or no independent working. Rushed, or evidence of inadequate preparation & review. | Uncritical dependence on facts or published arguments. Descriptive rather than argumentative. Poor or irrelevant structure and argument. | No or little self-evaluation. |
| | | Fail | Fail | Fail | Poor or inappropriate choice of skills. Poor language. Incoherent organization. Little or no independent working. Rushed, or evidence of inadequate preparation & review. | Uncritical dependence on facts or published arguments. Descriptive rather than argumentative. Poor or irrelevant structure and argument. | No or little self-evaluation. |
| | | 3 rd 40-49% | 2(ii) 50-59% | 2(i) 60-69% | Pass at merit | Pass | Pass |
| | | 1 st 70-100% | Distinctive | Disinction | | | |

The table indicates illustrative criteria that must be attained to obtain levels of marks within the marked ranges (degree classifications shown are for convenience). This is a generic table, and its use will differ in detail between assessments, with different weightings for the different columns. Carefully follow the guidelines provided with the coursework, and work to standards as high up each column as possible taking note of all criteria within the column.

Biology

Appendix 6. Criteria for assessing projects

| CLASS | MARK RANGE (%) | CRITERIA |
|-----------|----------------|---|
| Upper 1 | 90-100 | An outstanding project in all respects, worthy of publication as it stands, by itself or a component of a paper in a good journal. Exceptional level of motivation and independence. |
| Middle 1 | 80-89.9 | An excellent project. Evidence of originality, analysis totally sound, report concise and well written throughout, discussion showing real insight. Excellent use and understanding of literature. Only minor inaccuracies. Highly motivated and independent candidate. |
| Lower 1 | 70-79.9 | A very good project. Some evidence of insight and originality, results well-analysed. Report well-written. Good use of literature. Only minor mistakes. Motivated and independent candidate |
| Upper 2i | 65-69.9 | A good project. Research conducted appropriately, report well-organised but lacking insight and originality. Sound interpretation, analysis and presentation of data. Some inaccuracies. Initiative shown but in need of guidance in both data collection and report. |
| Lower 2i | 60-64.9 | A fairly good project: Generally sound but with some weaknesses in research activity, understanding, motivation, analysis, interpretation and/or presentation. Some initiative shown but in need of guidance in both data collection and report. |
| Upper 2ii | 55-59.9 | A fair project. Student carried out instructions with little contribution, report showing little or no thought, interpretation or synthesis. May be significant deficiencies in one or more section criteria. Moderate level of motivation |
| Lower 2ii | 50-54.9 | An acceptable project. Experimentation, analysis and/or interpretation show significant weaknesses. Poor motivation and/or level of independence. |
| Third | 40-49.9 | A weak project. Few data, very limited comprehension, significant weaknesses in several key marking criteria. Very limited motivation throughout project period. |
| Fail | 0-39.9 | Clear fail ranging from almost total lack of comprehension to very limited comprehension, little or no data collection, incompetent analysis and interpretation of results. Sections missing in report. No report submitted. Lacking all motivation and effort. |

Manchester University

Unit Marking Scheme with grade descriptors (Type B Assessment)

Table 2:

| Grade | Equivalent UG Class | Grade Descriptors |
|-------|--|--|
| A* | Excellent First | Exceptional work of the highest quality, demonstrating excellent knowledge and understanding, analysis, organisation, accuracy, relevance, presentation and appropriate skills. At final year level: work maybe achieved, or be close to publishable standard. |
| A1 | High First | |
| A2 | Mid First | |
| A3 | First Class | |
| B1 | High Upper Second | High quality work, demonstrating good knowledge and understanding, analysis, organisation, accuracy, relevance, presentation and appropriate skills. |
| B2 | Mid Upper Second | |
| B3 | Low Upper Second | |
| C1 | Higher Lower Second | Competent work, demonstrating some relevant knowledge and understanding. |
| C2 | Mid Lower Second | |
| C3 | Low Lower Second | |
| D1 | High Third | Work of limited quality, demonstrating some relevant knowledge and understanding. |
| D2 | Mid Third | |
| D3 | Low Third | |
| F1 | Compensatable Fail (can resit) | Poor performance, well below standard required for this stage of an honours degree. There may be evidence of some basic understanding of relevant concepts and techniques. |
| F2 | Fail (can undertake reassessment in accordance with UG regulations, not compensatable) | Very poor performance, well below standard required for this stage of an honours degree. |
| F3 | Zero (no reassessment, not compensatable) | Unacceptable Performance, work of no merit. Penalty in some misconduct cases. |

University of the Arts London

| Criteria | Level of Achievement Indicators | | | | | |
|---|---|--|---|--|--|---|
| | Fail F | Marginal Fail E | Pass D | C | B | A |
| Research Systematic identification and investigation of a range of academic and cultural sources | Little or no information presented | Information presented does not relate sufficiently to the task; there may be evidence of rudimentary research | Adequate information has been gathered and documented from readily available sources applying standard techniques | Information is accurate, appropriately categorised and from a range of sources | Well informed judgements made of the relative value of connected information from a wide range of sources | Extensive independent research, accuracy, familiarity with the material, and sound judgements |
| Analysis Examination and interpretation of resources | F Little or no evidence of examination of source material | E Constituent elements may be incorrectly identified; analysis may be attempted but not justified | D Key elements within relevant information are identified, but may lack accurate interpretation | C Accurate interpretation of the relationships between constituent elements | B Accurate interpretation and evaluation of relationships between elements | A Accurate and perhaps personally based synthesis and evaluation of elements |
| Subject Knowledge Understanding and application of subject knowledge and underlying principles | F Unable to evidence or articulate basic principles and knowledge related to the subject | E Limited knowledge of the subject and its development | D Evidence of understanding key aspects of the subject context, in current debates and / or historical background. References to some relevant movements / people | C Accurate understanding of subject context. References to key movements and people | B Accurate, extensive understanding of subject context. Evidence of appreciation of the relative significance of movements and people | A Contributes to the subject debate by assimilating knowledge into a personal hypothesis (or elements of / the beginnings of one) |
| Experimentation Problem solving, risk taking, experimentation and testing of ideas and materials in the realisation of concepts | F Little or no engagement with alternative ideas and processes | E Unable to identify problems; does not understand the purpose of risk taking or exploration of alternatives | D Operates within familiar and well established ideas, processes, media and / or materials; some evidence of exploration | C Evidence of exploration of processes, media and materials; may lead to potential directions for future work | B Evidence of conceptual risk taking / using own analysis to inform further cycles of inquiry and potential future directions | A Unfamiliar conceptual territories may be explored |
| Technical Competence Skills to enable the execution of ideas appropriate to the medium | F Execution demonstrates poor judgement and very limited command of techniques | E Uses limited rudimentary processes exercising little judgement | D Skills are adequate to communicate ideas; accepted conventions and procedures are usually applied | C Skills facilitate communication of ideas; evidence of checking / testing / finishing; conventions and procedures are used consistently and appropriately | B Skills facilitate practice and the communication of ideas; full command of conventions and procedures is evident | A Idea and technique are unified. Discernment and judgement are evident. Technical / craft skills may have contributed to conceptual advances |
| Communication and Presentation Clarity of purpose; skills in the selected media; awareness and adoption of appropriate conventions; sensitivity to the needs of diverse audiences | F Ineffective use of visual / oral / written communication conventions in the production and presentation of ideas | E Partial lack of awareness and observance of conventions and standards; lack of clarity in structure selection and organisation of information; lack of awareness of audience | D Conventions and standards are applied; structure is clear; information selection and organisation shows awareness of audience requirements and preferences | C Communication media have been selected / used with good judgement; standards and conventions of use have been fully adhered to; decisions show awareness of the audience and the context | B The nature and strengths of appropriate communication media have been exploited; information has been selected, organised and presented showing awareness of audience and context | A Message and medium are unified with personal style; the communication is persuasive and compelling; it takes full account of diverse audience needs |
| Personal and Professional Development Management of learning through reflection, planning, self direction, subject engagement and commitment | F Consistent lack of evidence of reflection or planning for learning. No awareness of personal strengths and weaknesses in relation to task | E Sporadic evidence of reflection and planning for learning but not followed through consistently. Incomplete awareness of personal strengths and weaknesses | D Evidence that reflection and planning have led to increased subject engagement and commitment. Developing an awareness of strengths and weaknesses | C Evidence that a cycle of reflection and planning has been iterative and productive. Actively works to develop strengths and mitigate weaknesses | B Reflection and planning is self directed, iterative, habitual and evidenced clearly. Strengths have been built on, weaknesses have been mitigated | A Takes full responsibility for own learning and development through iterative cycles of well articulated purposeful analysis and planning, supported by extensive evidence |
| Collaborative and / or Independent Professional Working Demonstration of suitable behaviour for working in a professional context alone, or with others in diverse teams | F Does not collaborate with others; unproductive working alone; shows no knowledge of related profession | E Collaborates reluctantly; struggles to produce work alone; has unrealistic view of professional life | D Awareness of main standards required of relevant profession. Able to work both collaboratively and independently | C Aware of and able to meet most standards required of relevant profession in simulated or real professional situations. Productive when working in a team or working alone | B Aware of and able to meet most standards required of relevant profession in simulated or real professional situations. May work well in a team, provide effective leadership, and demonstrate a well rounded profile working alone | A Integrates a sense of own identity productively into real or simulated professional situations. Can work comfortably as a team member, in a leadership role, or alone |

Examination / Course Project / Dissertation

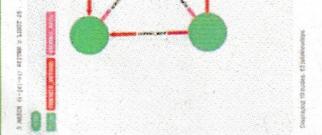
| CLASS OR GRADE | GRADE | EXAMINATION (ESSAYS) | COURSE PROJECT/ESSAYS | DISSERTATIONS |
|----------------|-------|----------------------|---|---|
| HONOURS CLASS | FIRST | 90 or greater | As good as could be expected under examination conditions. | Worthy of retaining for future reference and application to teaching or research. |
| | | 80 – 89 | A comprehensive and well argued complete answer that clearly demonstrates a deep understanding of the subject including use of references not mentioned in lectures or on reading lists. High intellectual quality as well as factual knowledge. Clear ability to distinguish between different ideas and arguments. Forms independent and critical opinion based on evaluation of evidence. Interesting to read. | Outstanding work based on a critical appraisal of a high volume of relevant material that makes an original contribution or contains an original finding relevant to the subject. |
| | | 70 – 79 | Goes beyond simply answering the question. Perceptive argument and focused with a good depth of material. Good structure of argument and independent critical evaluation of a well-referenced literature. Discusses relevant examples where appropriate. | Wide breadth and use of appropriate data or literature. Written and presented in an appropriate academic style. |
| | | 60 – 69 | Good understanding of the issues plus a coherent, well-read and a clear argument though lacking the originality of a first-class answer. Analytical and critical treatment of material. Strong evidence of knowledge from lectures and background reading from the reading list. Involves synthesis that goes beyond simply reproducing material given in lectures and seminars. | Thorough, clear treatment showing an understanding of arguments, contribution and context. Efficient use of data/literature. No serious flaws or misconceptions, but minor errors are acceptable. Engages with the major issues and comes to sound and coherently argued conclusions. |
| | | 50 – 59 | Provides a reasonable and relevant response to the question; shows some awareness of the literature and of relevant examples but rarely cites specific references (alternatively writes virtually entirely from references or examples but without tying them together); provides a reasonably structured account, but includes some signs of confusion; possibly contains errors of fact or interpretation. | Somewhat superficial treatment of wide literature or data OR adequate treatment of incomplete data or literature with little spark or critical insight. Reproduces material covered in lectures/seminars or follows quite closely the structure and content of a few key sources but adds only a little that comes from the student's own research and investigation. |
| | | 45 – 49 | A bare response to the question set; shows some knowledge of relevant material; poorly organised and structured, usually along the lines of "All I've found out about..."; may contain errors of fact or interpretation. | Very basic approach to a narrow or ill-judged selection of material. Poor background knowledge or flawed arguments. Lines of thought not sustained and conclusions are not fully supported by the text/project analysis. |
| | | 40 – 44 | Demonstrates some awareness of what the question is about; shows little recognition of relevant material; makes incorrect statements; little real sign of thought. | Inadequate and without serious scholarly appreciation but some value in terms of content reproduced. |
| | | 31 – 39 | Significant inability to engage with the question; significant amount of material irrelevant to the question posed and/or incorrect; may be poorly structured. Insufficient academic value to merit a pass grade. | Significant lack of adherence to project/essay outline or title. Reveals lack of understanding of task set or outcome required. Insufficient academic value to merit a pass grade. |
| | | 16 – 30 | Largely inadequate and/or unstructured answer, or almost entirely comprising irrelevant or incorrect material, lacking evidence of both understanding and relevant literature. Manifestly well below a pass grade. | Little adherence to project/essay outline or title. Unacceptable as a piece of coursework with one or more of following: irrelevant material; many errors; and lack of evidence of both significant understanding and relevant literature. Manifestly well below a pass grade. |
| | | 0 – 15 | Very minimal and manifestly academically poor answer to the question, or mostly/completely addresses something other than the question set. | Almost no attempt to complete task set or so manifestly academically inadequate as to have been deemed to have not completed coursework. |



Table of Contents

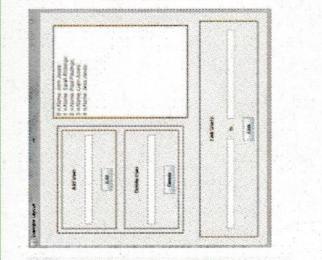
1. Project Aims and Challenges
2. Background
3. Project Specification

Summary

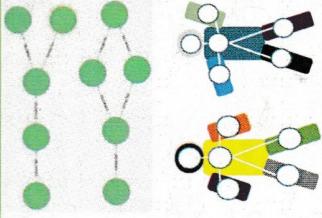


Summary

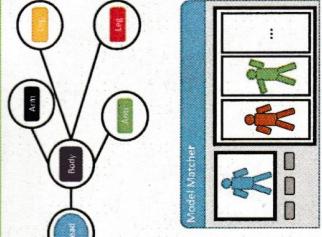
- Model matching is becoming popular
- Graph Matching is highly used and researched
- Graph databases are widely used
- An interesting project with many challenges



Questions and Answers



no picture of your work? Draw it!

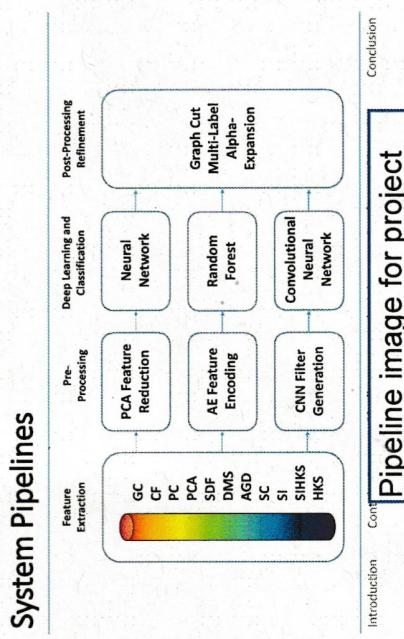


Summary

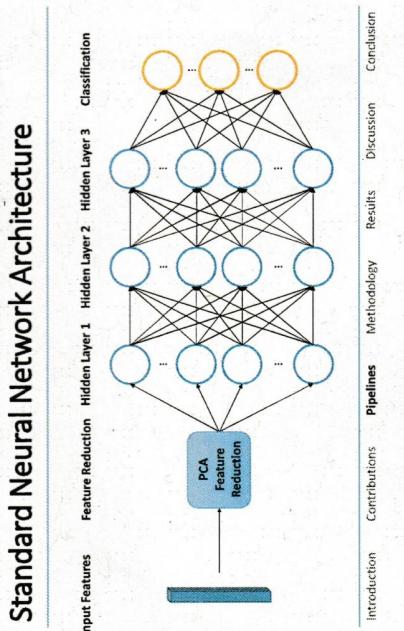
Thank You

Three takeaway messages

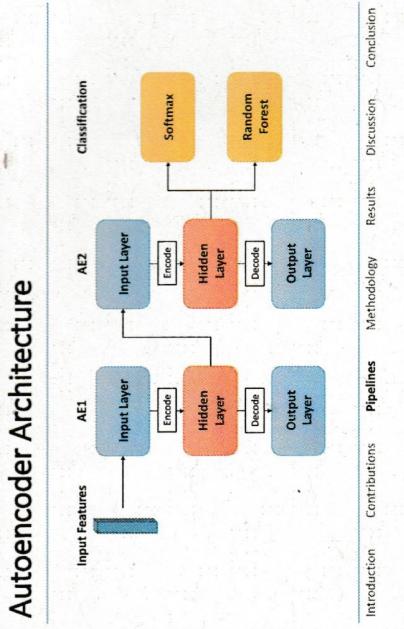
Summary



Standard Neural Network Architecture



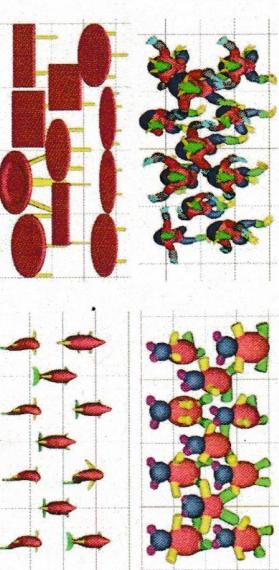
Autoencoder Architecture



Results

Results: Comparison

Results: Comparison



Introduction Contributions Pipelines Methodology Results Discussion Conclusion

Results

| PCA & CNN AAE & RNN Guo et al. [12] | | | | | | | | | | PCA & CNN AAE & RNN Guo et al. [12] | | | | | | | | | |
|-------------------------------------|-------|-------|-------|-------|-------|---------|-------|-------|-------|-------------------------------------|-------|---------|-------|-------|-------|-------|-------|-------|--|
| Airplane | 92.97 | 92.62 | 92.53 | 94.56 | 95.30 | Glasses | 94.22 | 96.57 | 96.42 | 96.95 | 96.69 | Bust | 78.33 | 73.76 | 70.49 | 82.47 | 86.78 | 88.32 | |
| Ant | 95.15 | 95.17 | 95.15 | 97.55 | 98.43 | Hand | 87.03 | 86.69 | 81.45 | 88.90 | 88.14 | Mech | 81.51 | 84.70 | 82.16 | 88.53 | 88.14 | 88.32 | |
| Armadillo | 88.21 | 88.43 | 87.79 | 90.90 | 92.24 | Human | 96.93 | 96.99 | 96.52 | 98.50 | 98.16 | Octopus | 93.75 | 92.59 | 91.53 | 94.54 | 95.29 | 95.17 | |
| Bearing | 79.35 | 86.43 | 85.09 | 88.67 | 89.69 | Plier | 99.22 | 99.18 | 99.17 | 99.29 | 99.17 | Table | 98.07 | 98.24 | 98.20 | 98.18 | 98.12 | 98.12 | |
| Bird | 85.14 | 88.93 | 88.20 | 86.20 | 89.97 | Teddy | 79.73 | 82.07 | 80.24 | 82.81 | 82.00 | Vase | 88.02 | 89.42 | 88.44 | 91.17 | 91.48 | 91.48 | |
| Bust | 54.10 | 62.74 | 63.38 | 70.06 | 61.97 | Table | 83.61 | 83.99 | 82.32 | 81.91 | 85.05 | Average | 83.61 | 83.99 | 82.32 | 81.91 | 85.05 | 85.05 | |

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Conclusion

- We have shown a novel way of using CNNs for automatic mesh segmentation
 - Using 1D inputs and filters
 - Using multi-scale features and a multi-branch network
- We also performed a comprehensive and comparative study of several deep learning techniques for mesh segmentation
 - NIN, AE, CNN
- We also shown a novel way of computing conformal factor which is less sensitive to large curvatures in small areas
- Finally introduced a feature similarity term into the graph cut post-processing.

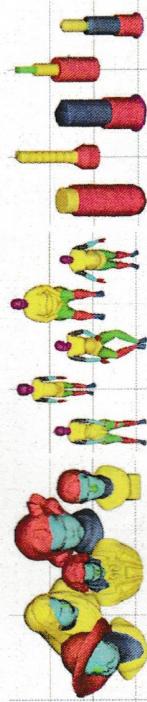
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Introduction Contributions Pipelines Methodology Results Discussion Conclusion

Discussion

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- Certain sets are extremely challenging (e.g. Bust) with large varying meshes and little training data.
- The ground truth is also poor or not well-defined in certain sets:



Introduction Contributions Pipelines Methodology Results Discussion Conclusion

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summary in keywords

Future Work

- We would like to provide a more consistent and meaningful ground truth segmentation for existing datasets.
- We also believe there is still room for improvement when it comes to deep learning techniques applied to mesh segmentation
 - Such as the combination of AE and CNNs

Thank You!

Introduction Contributions Pipelines Methodology Results Discussion Conclusion