

Research Writing in English

Research Writing

Research = the **physical process** of gathering information + the **mental process** of deriving the answer to your question from the information you gathered.

Research writing = the process of **sharing the answer** to your research question along with the **evidence** on which your answer is based, the **sources** you used, and your own **reasoning** and **explanation**.

<https://courses.lumenlearning.com/englishcomp2kscopexmaster/chapter/what-is-research-writing>

Citation

Capitalization

Punctuation

Numbers

Grammar

Tables

Equation

**Online
services**



Citation

In-text citation

Put number in [] and arrange at the same level of the content or, ranging from number 1 and continue throughout the thesis.

Example:

...since the need for mobile communication system is increasing rapidly and radio wave is a limited resource, the resource management [1]...

"...end of the line for my research [13]."

"The theory was first put forward in 1987 [1]."

"Several recent studies [3, 4, 15, 16] have suggested that..."

"For an example, see [7]."

"For an example, see Punyabukkana [7]."

Citing authors

1. Foreign authors: List last name, followed by the abbreviated first name, separated by a comma (,) e.g. Reynolds, F.E.
2. Thai authors: List first name, followed by last name e.g. Rakchat Niyomthai
3. Thai authors with rank of nobility: List name, followed by a comma (,) e.g. Thammasak Montri, Chaophraya *Omit academic or other ranks such as Pol. Col., Assoc. Prof. e.g. Wasit Dejkunchorn
4. Less than 6 authors: List all names, with the word “, and” before the last author’s name e.g. Rakchat Niyomthai, Suwat Jingjai, and Rakthai Panthae
5. More than 6 authors: Use the word “et al.” or “and others” e.g. Rakchat Niyomthai et al.
6. Institutional authors: Re...terior, Ministry. Department of Local Administration. with...least the Department level and put the highest organization

Chulalongkorn University for references

<https://www.grad.chula.ac.th/download/thesis.pdf>



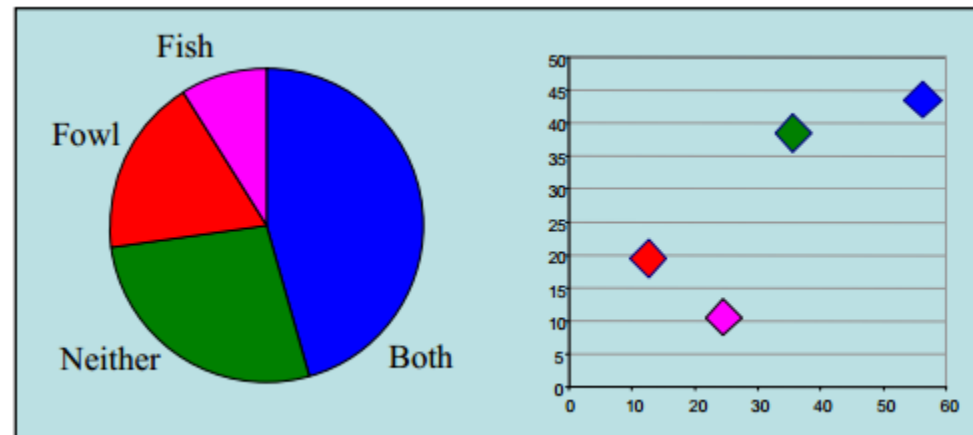
Figures

Principles to make Good Figures

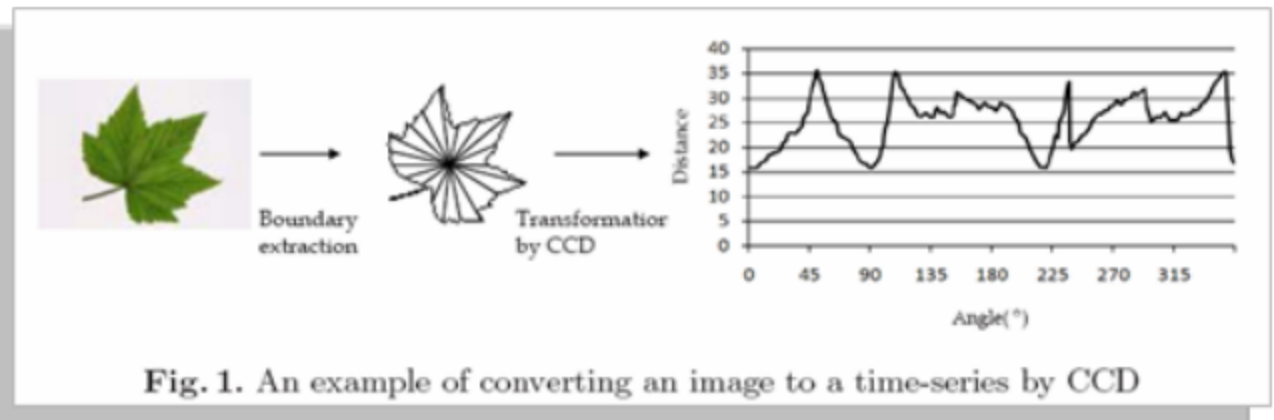
Modified from Eamonn Keogh

- Think about the point you want to make, should it be done with words, a table, or a figure. If a figure, what kind?
- Make sure figures are clear, crisp, easy to understand
- Eliminate unnecessary info
- Make sure that the captions are meaningful
- Consider using
 - Color (but you cannot depend on it)
 - Linking
 - Direct labeling

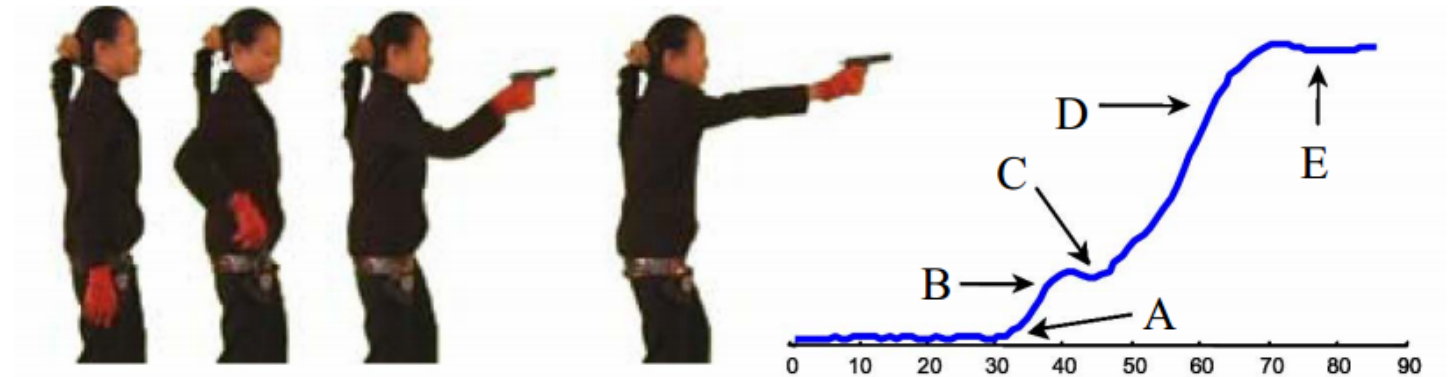
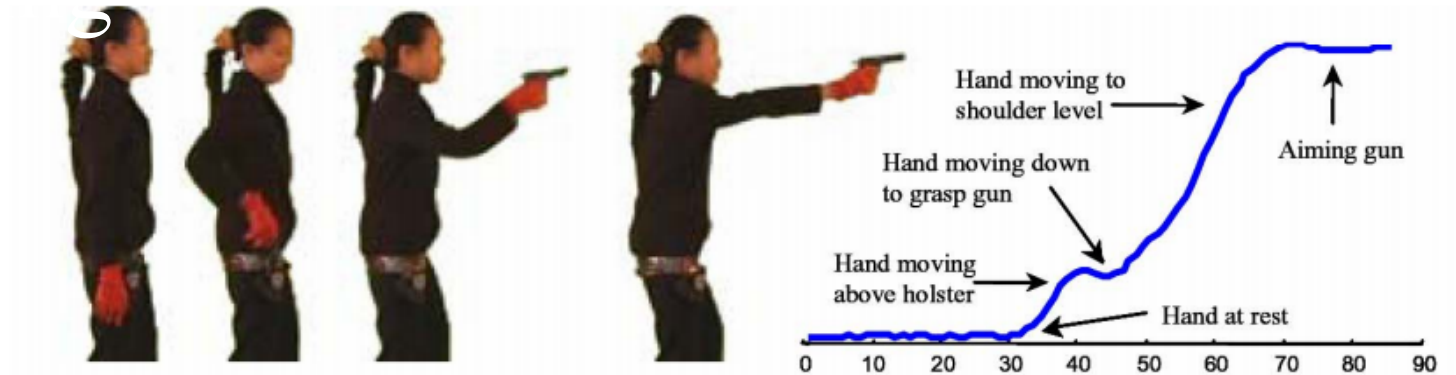
Colo



Linkin



Direct



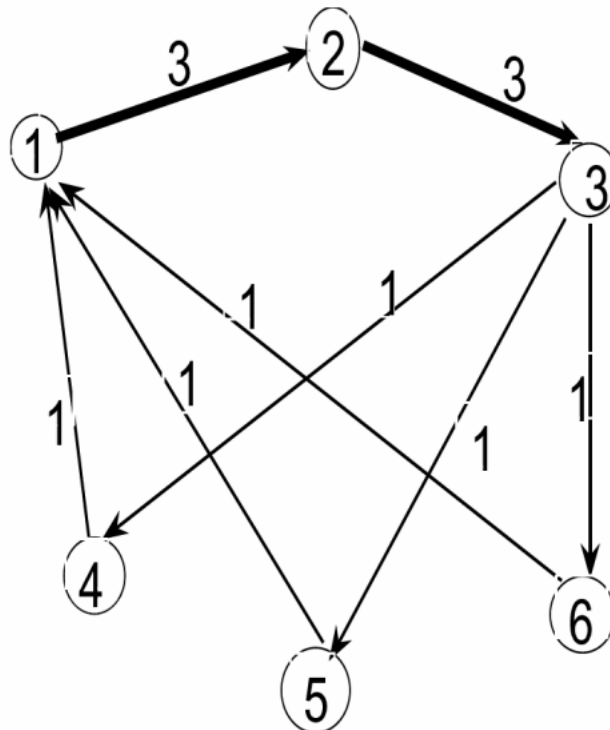
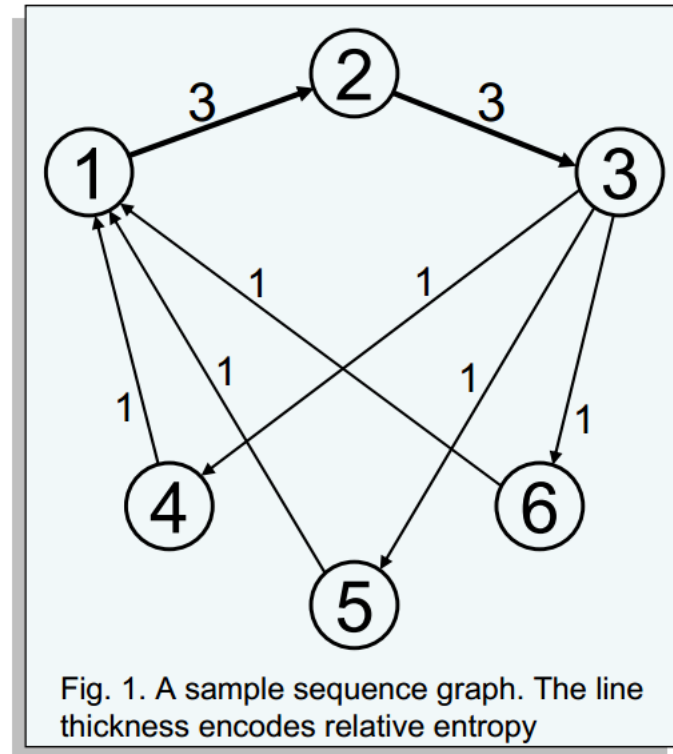


Fig. 1. Sequence graph example



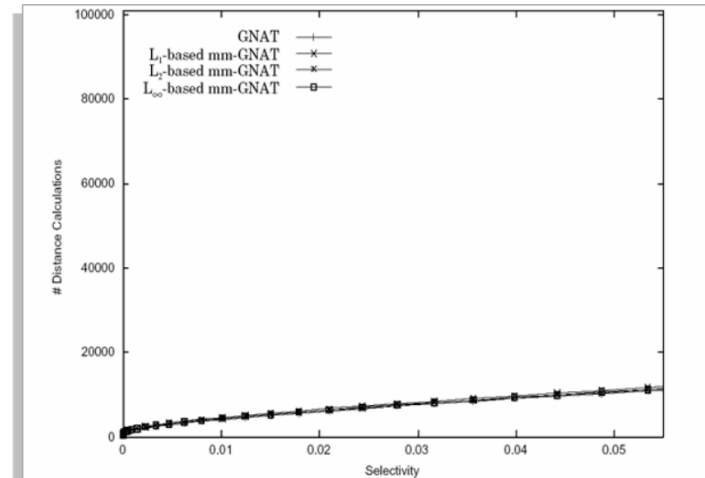
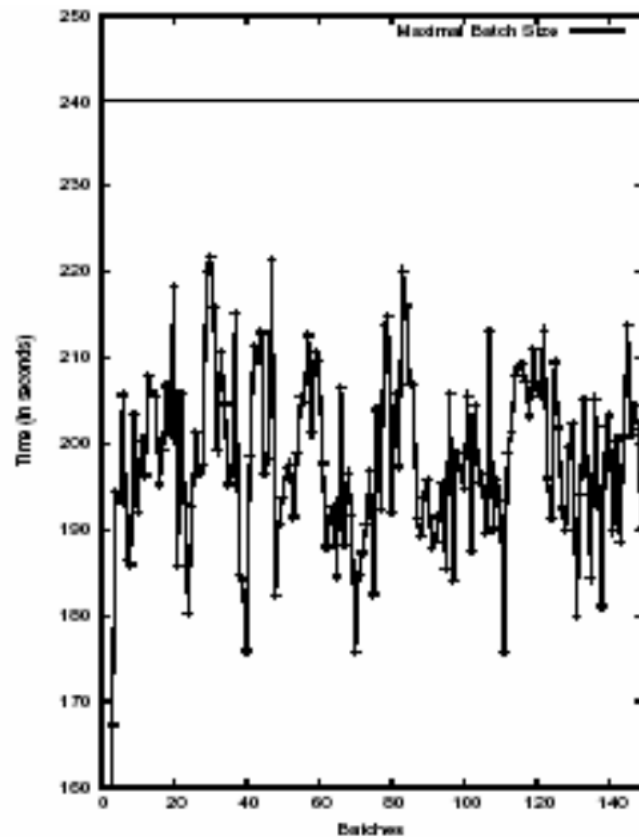
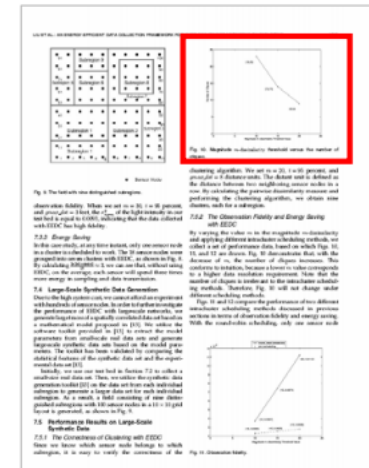
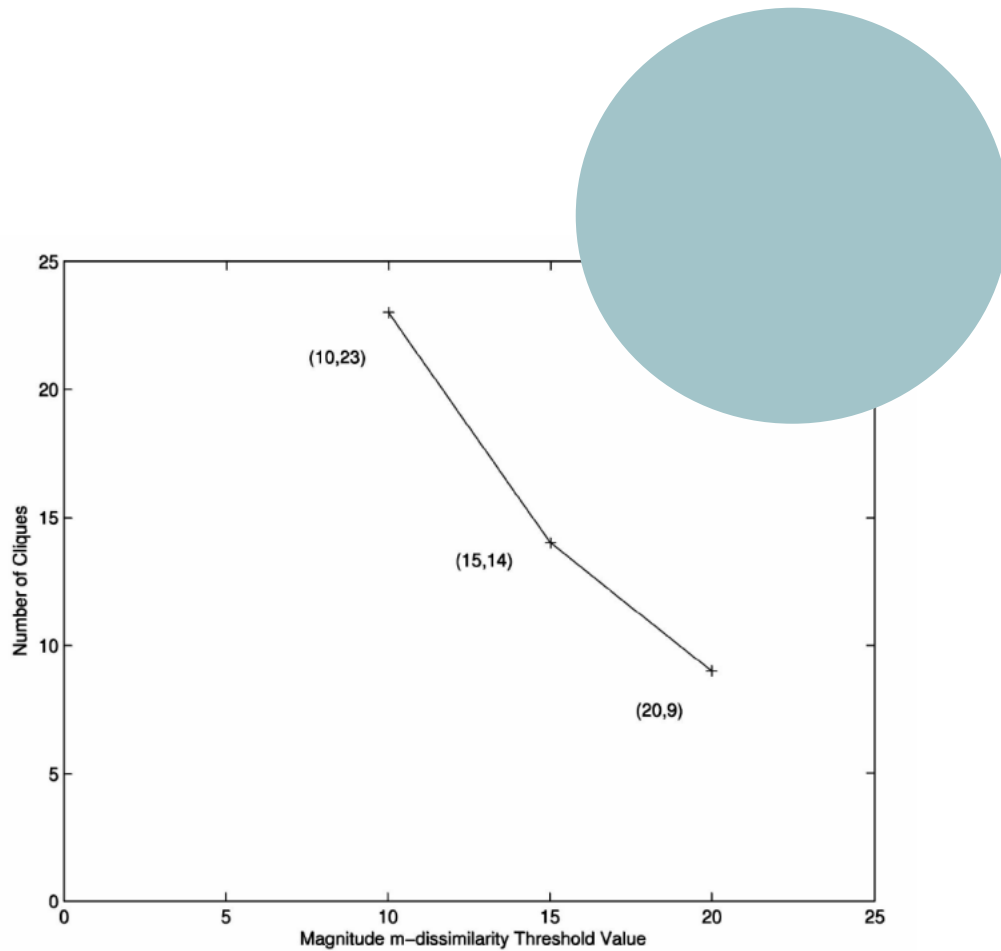


Figure 9. Selectivity versus number of distance calculations (search by L_{∞} norm, DB_4)



Similarities between similar motions are computed for the 100 motions, and similarity between each motion and other 99 dissimilar motions are also computed. Fig. 5 shows the similarities of more accurate motions and the high similarities between each motion and the other 99 different motions. For more accurate motions, similarities between similar motions are higher than those between the same motion and all other dissimilar motion, achieving 100% recognition rate for the 100 different motions. For the less accurate motions, 92% similar motions have higher similarities than dissimilar motions.

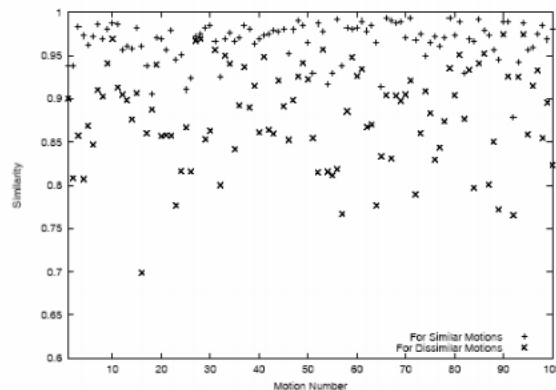


Fig. 5. Motion Similarities

plotted in Figure 5. Note that any *correctly* classified motions must appear in the upper left (gray)

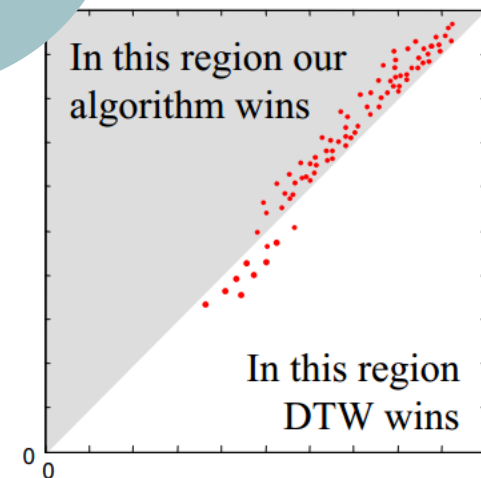


Figure 5. Each of our 100 motions plotted as a point in 2 dimensions. The X value is set to the distance to the nearest neighbor from the *same* class, and the Y value is set to the distance to the nearest neighbor from any *other* class.

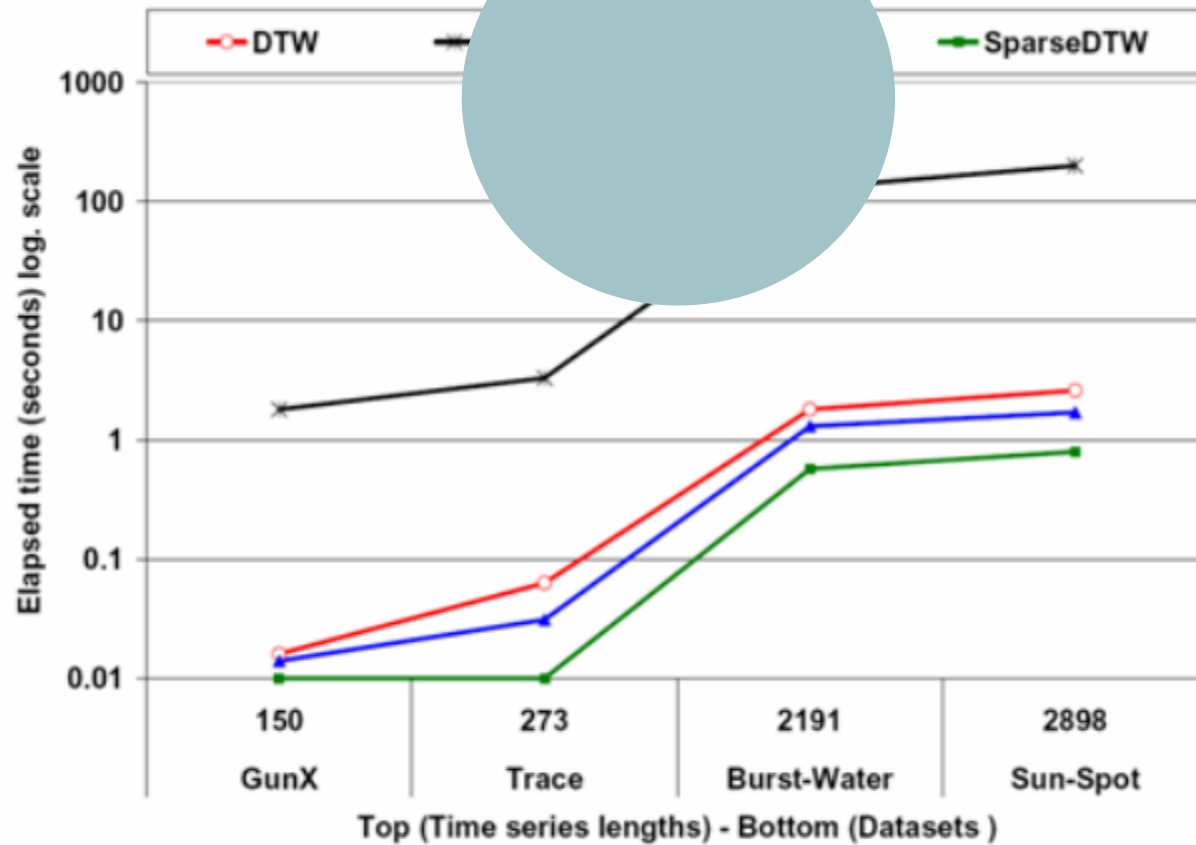
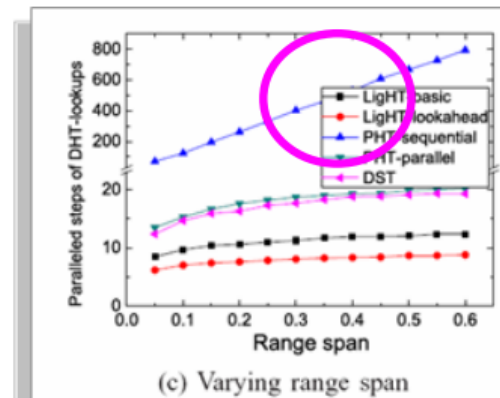
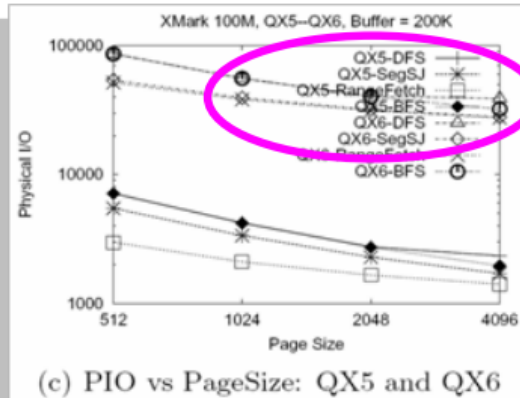
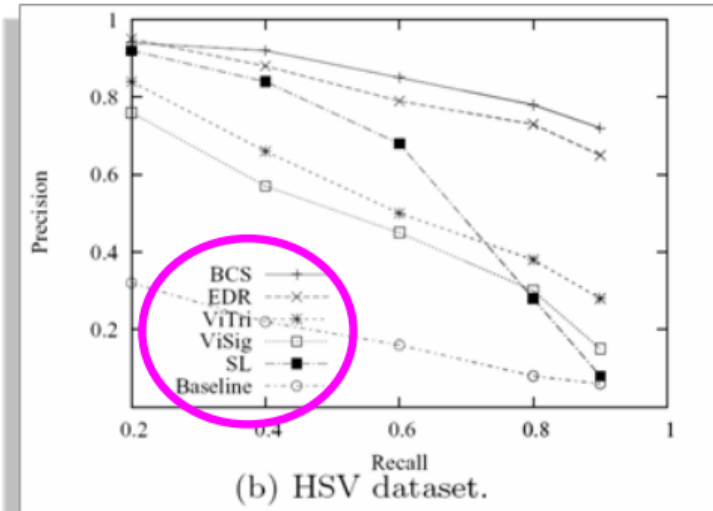
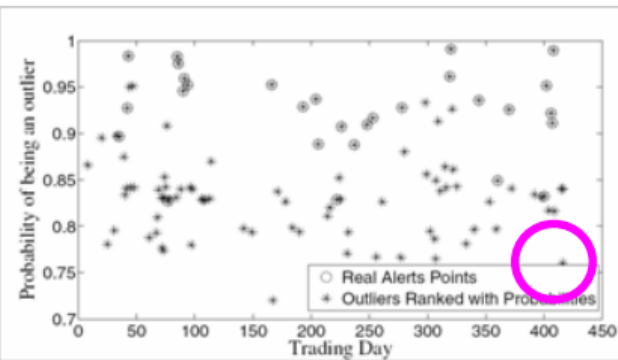
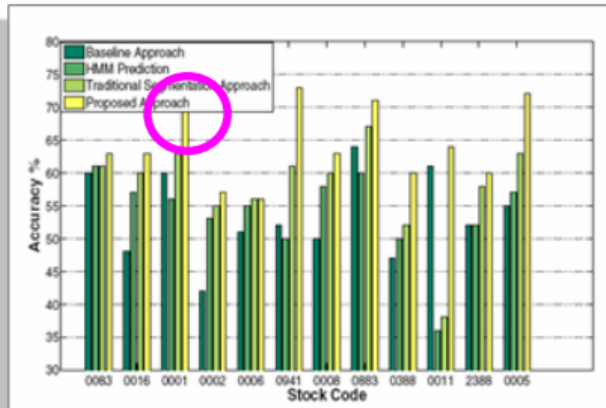
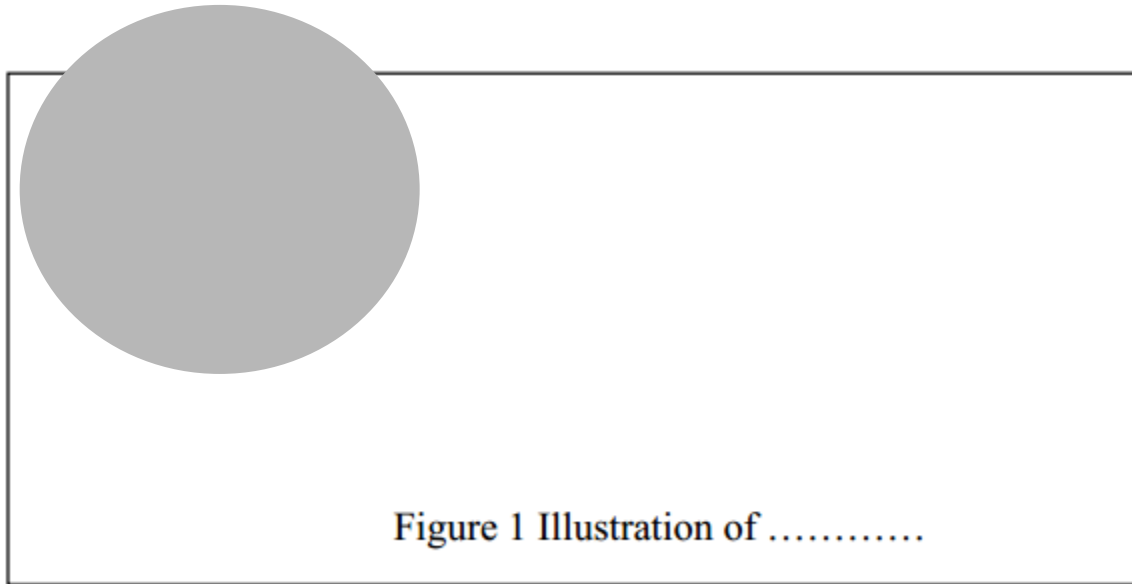
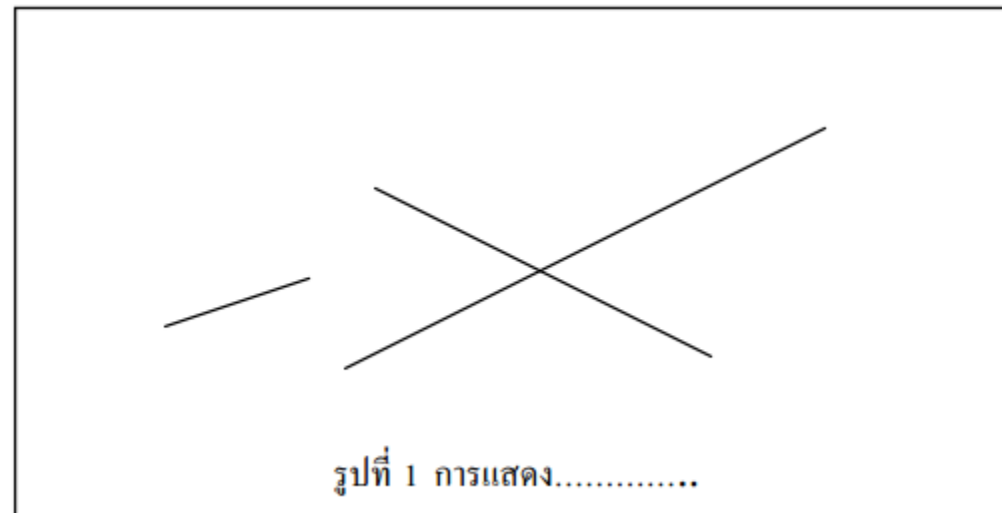


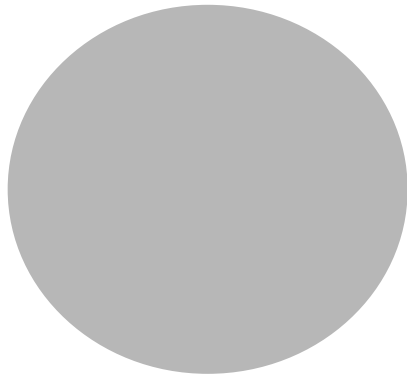
Figure 5: Elapsed time using real life datasets.



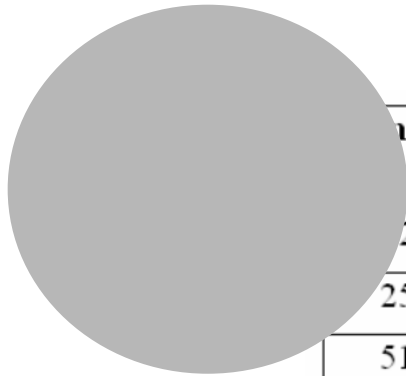


Figures





Tables



	Method 1	Method 2	Method 3	Method 4	Method 5
128	0.7767	0.9589	0.9589	0.7772	0.77
256	0.7144	0.9567	0.9411	0.8622	0.7433
512	0.6683	0.9419	0.9508	0.9408	0.7781
Avg	0.7198	0.9525	0.9503	0.8601	0.7638

Table 3: Similarity Results for CBF Trials

Tables

Redesigned by Keogh

Length	Sequential Sparsification	Linear Sparsification	Quadratic Sparsification	Wavelet Sparsification	Raw Data
128	0.77	0.95	0.95	0.77	0.77
256	0.71	0.95	0.94	0.86	0.74
512	0.66	0.94	0.95	0.94	0.77
Avg	0.71	0.95	0.95	0.86	0.76

Table 3: Similarity Results for CBF Trials




“Tables are a  of scientific papers. A good table should present the data simply, clearly and  reader to understand the results without having to look at other sections of  can be very confusing, and may reduce the chances of your paper being accepted.”

Table 1. Height after treatment

Group	light	5 days	10 days
control	12	70.3±2	90±10.5
test	12	60.4±1.5*	78±7.9*
control	16	75.7±8.	100±3
test	16	52.2±2	81±6.7

* $P<0.05$.

Table 1. Exposure to salinity reduces the growth of wheat plants.

Group	light	5 days	10 days
control	12	70.3±2	90±10.5
test	12	60.4±1.5*	78±7.9*
control	16	75.7±8.	100±3
test	16	52.2±2	81±6.7

* $P<0.05$.

<https://www.scienceeditingexperts.com/blog/creating-tables-in-scientific-papers-basic-formatting-and-titles>

Table 2. Cost sharing

	Bangkok	Provinces
1. Franchise fee	400,000	400,000
2. Franchise fee reimbursed with interest at maturity	300,000	300,000
3. Furniture	500,000	1,000,000
4. P.O.S.	300,000	300,000
5. Goods insurance	400,000	400,000
Total	1,900,000	2,800,000

ตารางที่ 2 ส่วนแบ่งในการดำเนินธุรกิจคอกหมูแฟรนไชส์

การลงทุนของคอกหมูแฟรนไชส์	กรุงเทพฯ	ต่างจังหวัด
1. FRANCHISE FEE	400,000	400,000
2. ค่าประกันสัญญา คืนเมื่อครบสัญญาพร้อมดอกเบี้ย	300,000	300,000
3. เฟอร์นิเจอร์	500,000	1,000,000
4. P.O.S.	300,000	300,000
5. ค่าประกันสินค้า	400,000	800,000
รวม	1,900,000	2,800,000

Tables and Figures are placed at the top or bottom of the papers.

Equation



Equation

(6.1)

More on equations, see http://www.latech.edu/graduate_school/thesis_dissertations/coes_equation_guidelines.pdf

2.1 Introduction

Theoretical design procedures were not available when sand drains were first used and the early installations were designed on an empirical basis. Theoretical design procedures based on Terzaghi's theory of consolidation of compressible soils were developed by Barron (1947). The customary Terzaghi form for expressing the differential equation for one-dimensional consolidation is as follows.

$$\frac{\partial u}{\partial t} = c_v \frac{\partial^2 u}{\partial z^2} \quad (2.1)$$

where

- c_v = coefficient of consolidation
- u = excess pore pressure
- t = time for dissipation of excess pore pressure
- z = depth coordinate

The solution to the differential equation is

$$t = T_v \frac{H^2}{c_v} \quad (2.2)$$

where

- $T_v = -0.1 - \lg(1 - U_v)$
- H = length of drainage path
- U_v = average degree of vertical consolidation

The coefficient of consolidation, c_v , determined by Eq. 2.2. The equivalent horizontal coefficient for horizontal drainage is c_h . The coefficients are assumed constant over the usual loading range.

Numbers

Numbers

- When to write numbers out, when to use numerals?
- Writing large numbers. When to use comma to separate large numbers? When to use words like “billion”?
- Writing fractions
- Writing decimals
- Writing percentage
- Numbers at the beginning of the sentence.

https://www.ieee.org/content/dam/ieee-org/ieee/web/org/conferences/style_references_manual.pdf

<http://people.physics.illinois.edu/Celia/Lectures/Numbers.pdf>

https://owl.purdue.edu/owl/general_writing/grammar/writing_numbers.html

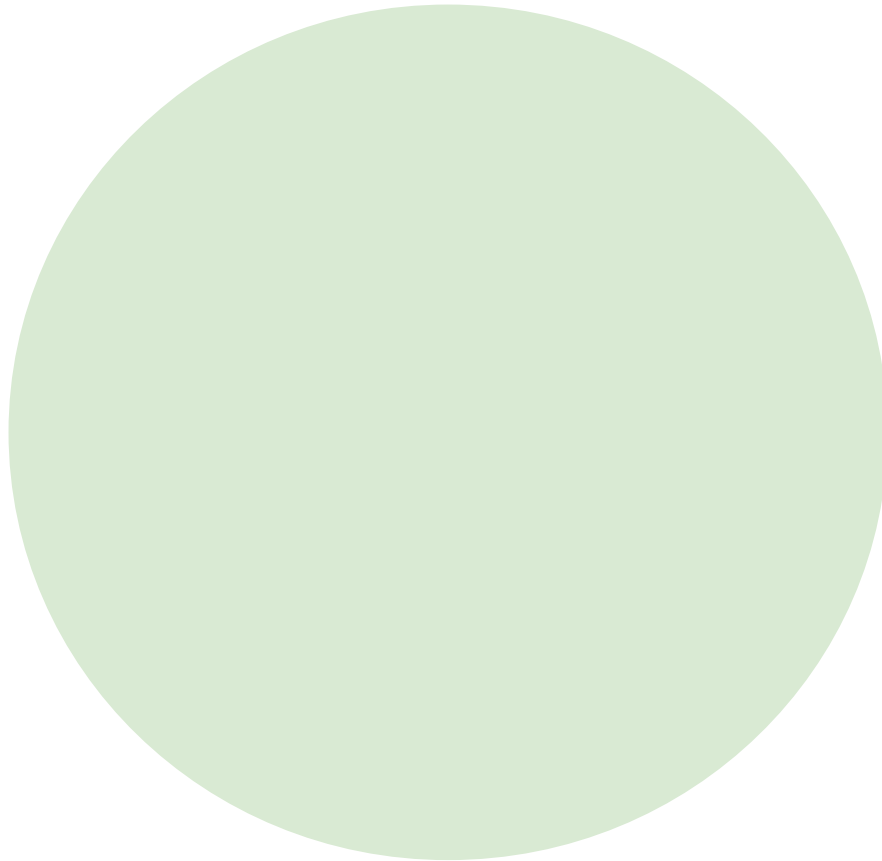
<https://procomm.ieee.org/using-numbers-in-technical-documents-2/>

https://owl.purdue.edu/owl/general_writing/grammar/writing_numbers.html

Numbers

- **Measurements** (e.g. 6 kg, 3 cm, 10 min, 2 hr, 3 days, 6 years, 5 decades)
- **Currency** (e.g. \$1 million)
- **Statistics** (e.g. A survey of participants revealed that 4...)
- **Mathematics**
- **Decimals**
- **Percentages**
- **Ratios**
- **Percentiles** (e.g. the 1st quartile)
- **Times** (e.g. ...)
- **Dates** (e.g. Wednesday, 12 October 2019)
- **Scores/points on a scale**

<https://www.eapfoundation.com/writing/skills/numbers/>



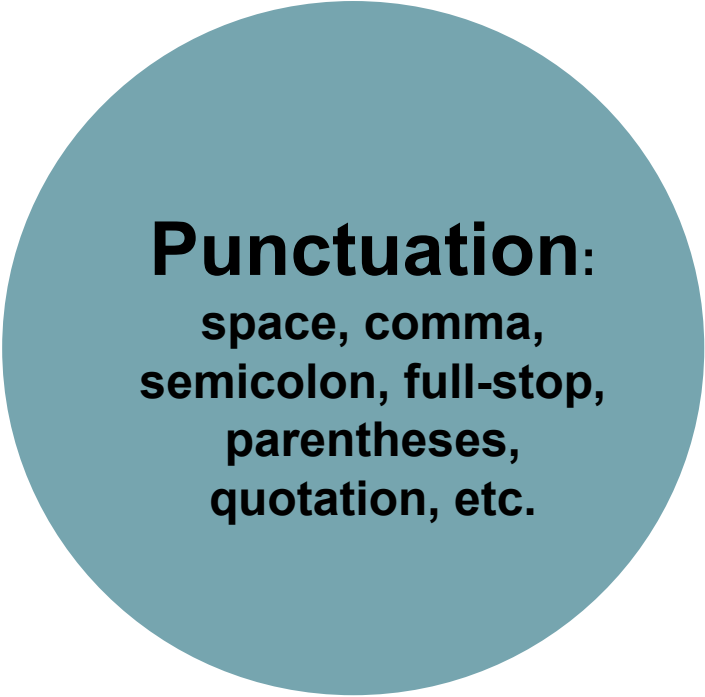
Capitalization

- In titles
- In headings
- Proper nouns, proper names
- Fields, Courses, etc.
- Nouns followed by numerals
- Abbreviation (and its full version)
- **** **WHAT NOT to capitalize???** ****
- When to use **bold fonts** and *italic fonts* (not really about capitalization!)

<https://academicguides.waldenu.edu/writingcenter/apa/other/capitalization>

<https://www.topcorrect.com/blog/capitalization-use-it-effectively-in-your-research-work/>

<https://www.editage.com/insights/scientific-writing-tips-on-capitalization-in-bullet-point-lists>



Punctuation:
space, comma,
semicolon, full-stop,
parentheses,
quotation, etc.

Punctuation

- Comma, semicolon, colon
- Brackets, parentheses
- Apostrophes, marks, ellipses
- Hyphens
- Question mark
- Punctuation in different situations
hyphens, writing abbreviation, quotation

<https://www.editage.com/insights/omit-colons-and-full-stops-after-headings-in-research-papers>

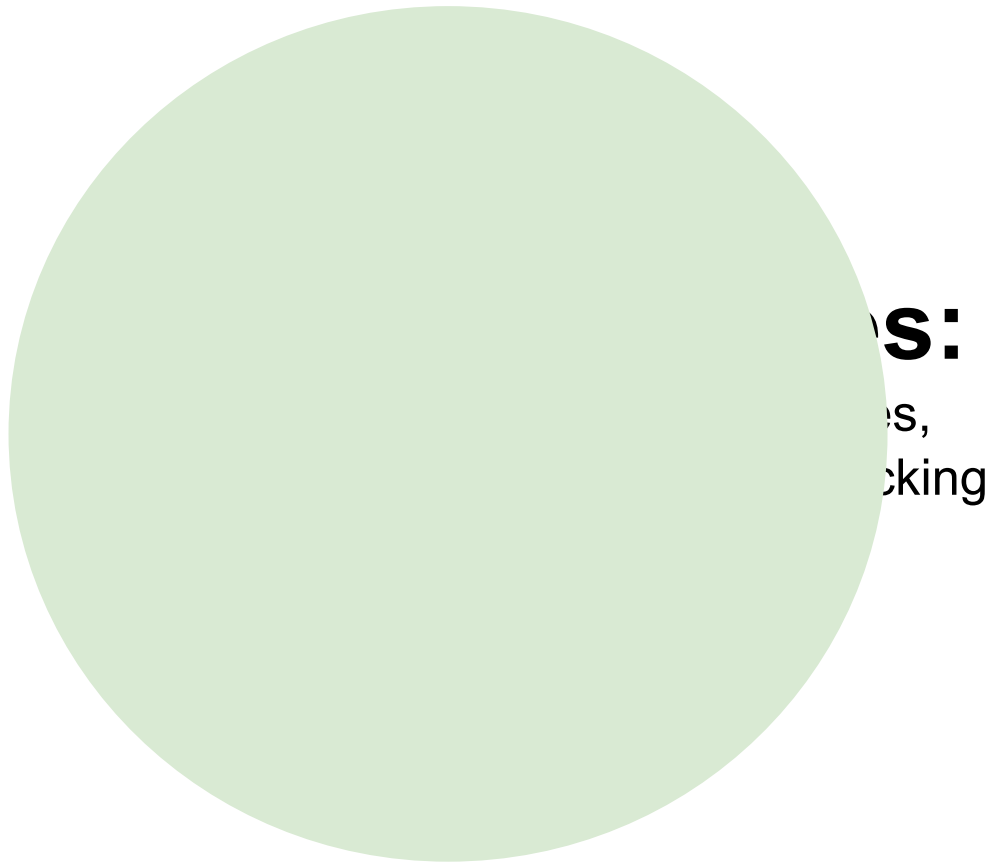
<https://www.editage.com/insights/quick-tips-on-using-commas-brackets-and-dashes-in-a-research-paper>

<https://www.editage.com/insights/hyphenation-proceed-with-caution>

<https://courses.lumenlearning.com/suny-engcomp1-wmopen/chapter/text-brackets-parentheses-and-ellipses/>

<https://www.swarthmore.edu/writing/dashes-parentheses-brackets-ellipses-0>

<https://www.eliteediting.com.au/apostrophes-brackets-parentheses-and-ellipses/>



Issues:
Issues,
Tracking

Online services

- Online editing services:

- www.grammarly.com

- Enago (Chula x Enago 40% discount)

- Other online services which you can use.

- Compare and contrast them (services-cost-time)

- Research writing courses:

- Coursera (<https://www.coursera.org/courses?query=academic%20writing>)

- Udemy (<https://www.udemy.com/topic/research-paper-writing/>)

- Others (<https://sites.duke.edu/scientificwriting/>, <https://online.stanford.edu/courses/som-y0010-writing-sciences>, <https://www.classcentral.com/course/writing-college-research-4201>, <https://www.futurelearn.com/courses/research-writing>)


- See what they have to offer or look for ones in Thai!

- Plagiarism checking services:

- Turnitin

- อักษรวิสุทธิ์

- What else?



Grammar:
articles,
plural/singular,
tenses

Grammar

- Tenses. When to use? When to use present?
- When to use singular?
- Use

https://www.researchgate.net/publication/311111111/rules_for_using_tenses_in_scientific_papers
<https://wordvice.com/which-tense-should-be-used-in-abstracts-past-or-present/>
<https://acm.internationalscienceediting.com/verb-tenses-scientific-manuscripts/>
<https://www.uv.mx/personal/damoraes/files/2018/09/A-Writers-Reference-7th-Edition.pdf>

More resources

- <https://www.editage.com/blog/5-ways-to-writing-a-brilliant-research-paper>
- <https://ieeexplore.ieee.org/document/55926>
- <http://en.fel.zcu.cz/~fcl/academic%20Writing/How%20to%20write%20a%20paper/Guide%20to%20writing%20a%20paper.htm>
- https://www.researchgate.net/publication/312511616_Writing_tenses_in_scientific_papers
- <https://aslopubs.org/doi/10.1002/lrbc.10052>