

# **EEET2449 Research Methods for Engineers**

## **Lecture 11: Analysing Coverage of Lit Review with graphs**

**Dr. Francisco Tovar**

# Overview

- Assignment 2 Ref style
- Feedback and Review on Coverage
- What's on W11 and W12
- A reminder: daily feedback sessions. Book your session. Please cancel if you know you cant make it.

# Requirement for Assignment 2

- Use the Research\_Methods bibliography style
- Endnote and Mendeley formats available.
- Designed to Save space & provide DOI (citations)

Authors, *Journal Title*, Volume, doi, (Year).

- 1 Oliveira, M. B. et al. *ACS Appl Mater Interfaces* 6, doi:10.1021/am5018607 (2014).
- 2 Fu, Y. et al. *Iet Renew Power Gen* 13, doi:10.1049/iet-rpg.2018.5802 (2019).
- 3 Ahmadabad, F. K. et al. *J Appl Polym Sci* 136, doi:10.1002/app.48034 (2019).
- 4 Araby, S. et al. *Nanotechnology* 30, doi:10.1088/1361-6528/ab2a3d (2019).
- 5 Ang, M. B. M. Y. et al. *J Membrane Sci* 587, doi:10.1016/j.memsci.2019.117188 (2019).
- 6 Huang, G. et al. *ACS Appl Mater Interfaces* 9, doi:10.1021/acsami.6b09017 (2017).

- Instructions available under Assignment 2

### Assignment-2: Research Proposal (week 12)

Published

Dear Research Methods (EEET2449) students

This is your **Assignment-2 (Research Proposal)**, which should be submitted by 23:59 18 Oct.

Please follow the format given in the attached file: [Assignment 2 template and instructions.docx](#) ↓

The contents of the proposal along with two examples have been discussed in my week-8 lecture.

Please note that:

- The proposal should strictly three pages.
- Insert the sub-title for each section, as given in the attached file.
- No cover sheet is needed.
- Make sure to insert your name and student ID.
- Submit your assignments only in PDF format.
- 20 references are needed with at least 5 of them published after 2017 (including 2017). Use the .ens file (below). 10 or 9 font size allowed.
- You can show me the draft of your proposal during week 11 and 12 lectures to get feedback.
- Please use the Research Methods 2019 referencing style (see below).
- You can find the rubric for Assignment-2 in the following file:

[Assignment-2 rubric 2019.xlsx](#) ↗

**Bibliography Style (Required - not optional):**

[The Research Methods 2019 bib Style-1.pdf](#) ↓

[ResearchMethods\\_2019.ens](#)

ResearchMethods\_2019.ens

You can find two proposal examples here:

[EEET2449--EEET1142 Example Proposal 1.pdf](#) ↓

[EEET2449--EEET1142 Example Proposal 2.pdf](#) ↓

# Review of Coverage:

Coverage impacts:

the gaps present,  
the methods /technologies available

A good coverage makes them:

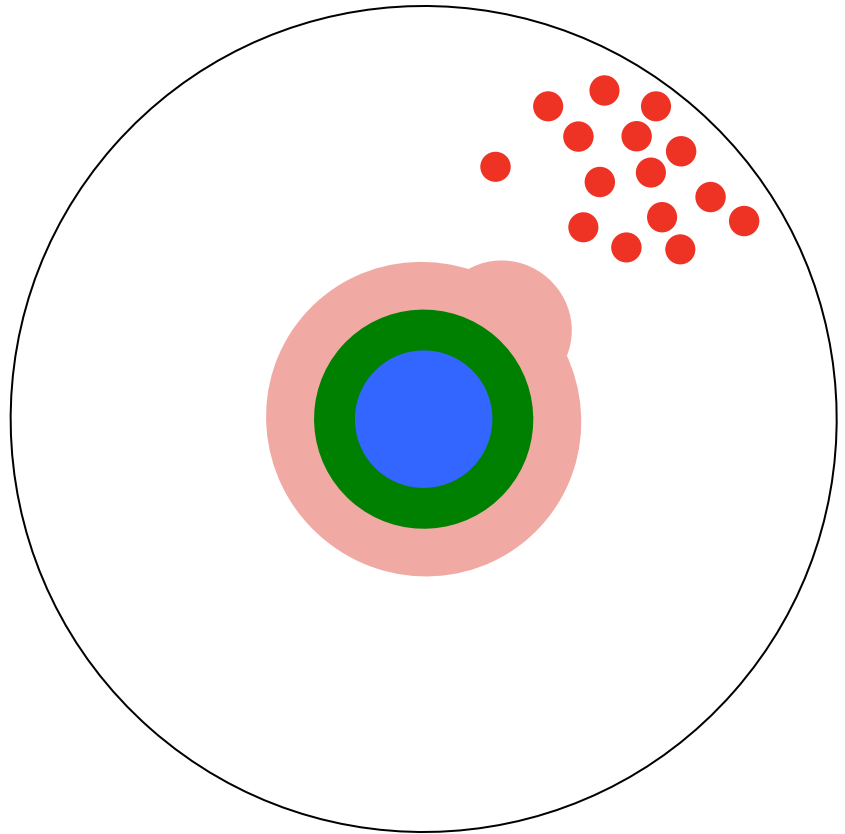
Relevant, recent, up to date, etc.

<b>Significance</b>	
Clearly highlighting the significance	5.0%
Written for general audience	5.0%
Proper citation	5.0%
<b>Literature review</b>	
Coverage of the field	10.0%
Flow of story/connectedness/evolution of technology	10.0%
Analytical discussion (Highlighting advantages/disadvantages)	30.0%
Proper citation	5.0%
<b>Identification of gaps</b>	
Clear	10.0%
Connected to literature review	7.5%
<b>References</b>	
Timing	2.5%
Styling	2.5%
Number of references	2.5%
<b>Layout</b>	
Formatting matches the template	5.0%
<b>Total</b>	100.0%
Exceeding two page limit (-5%)	0.0%
Delay penalty (-5% per day)	0.0%
<b>Final</b>	100.0%

# Review of Coverage:

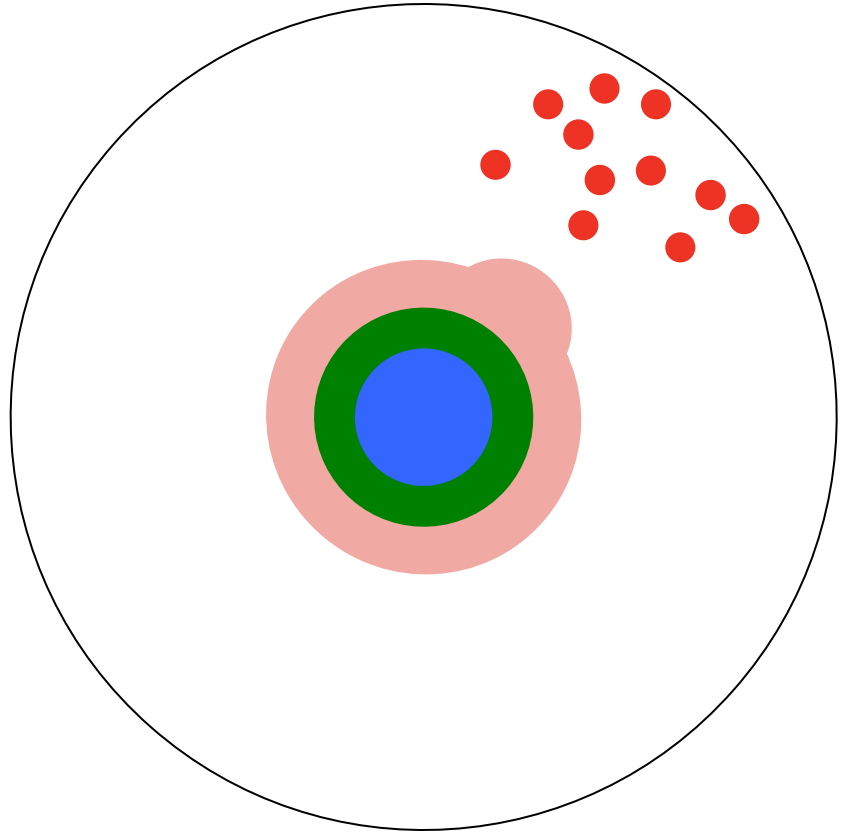
Let's remember from our search strategies, how the body of knowledge can be depicted

**Start with a keyword:**  
You will find lots of papers !



## **Strategy 1:**

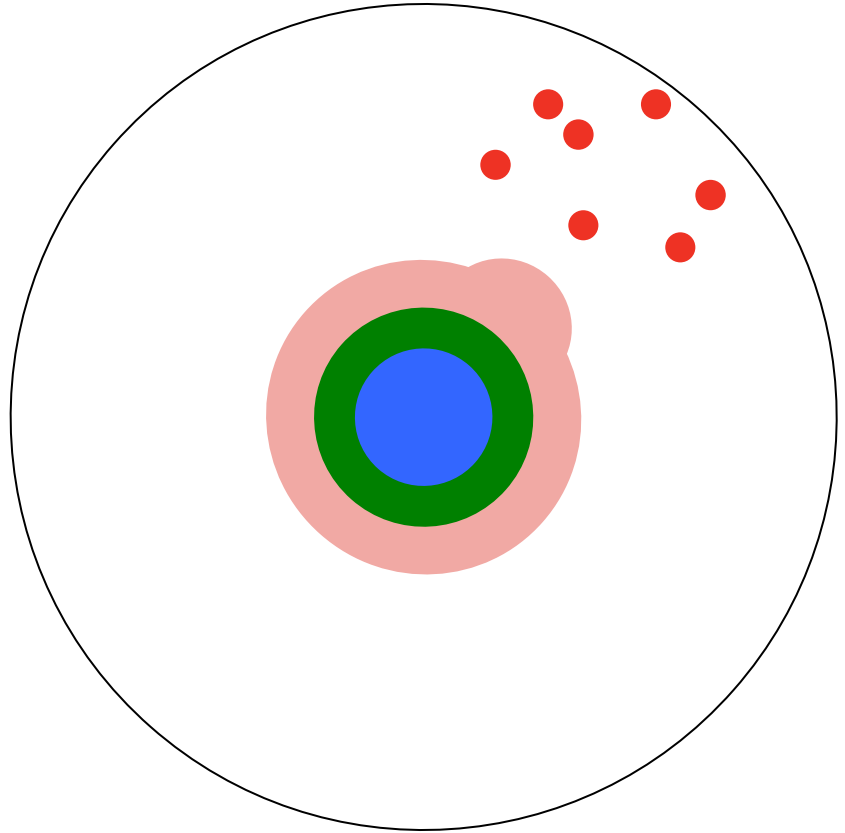
Limit your search to the past  
10 years





## **Strategy 2:**

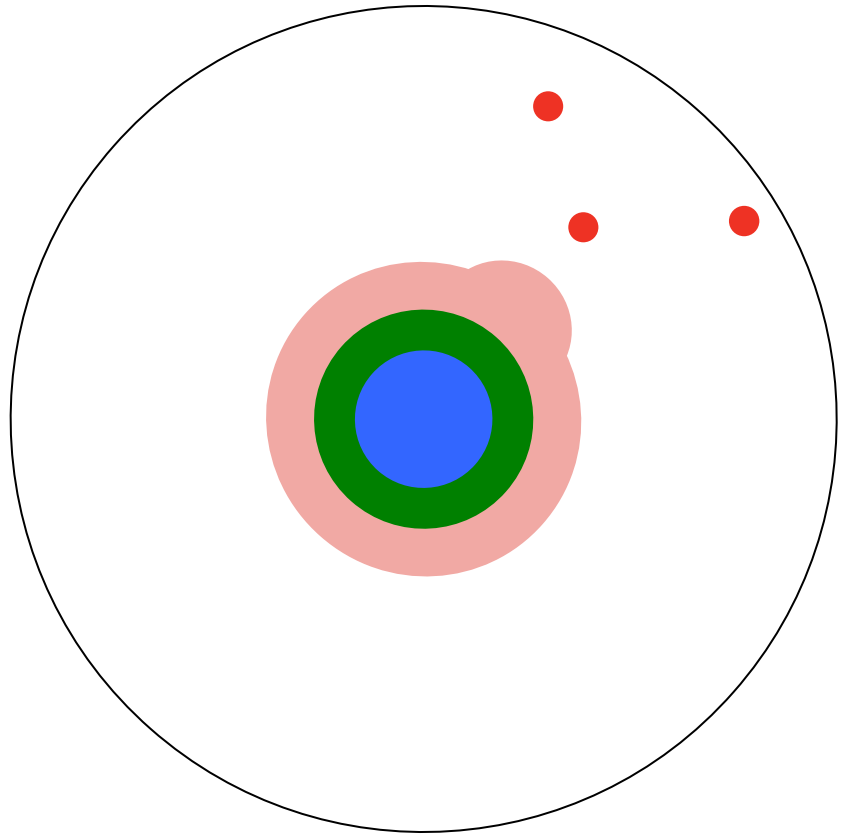
Limit your search by adding more keywords



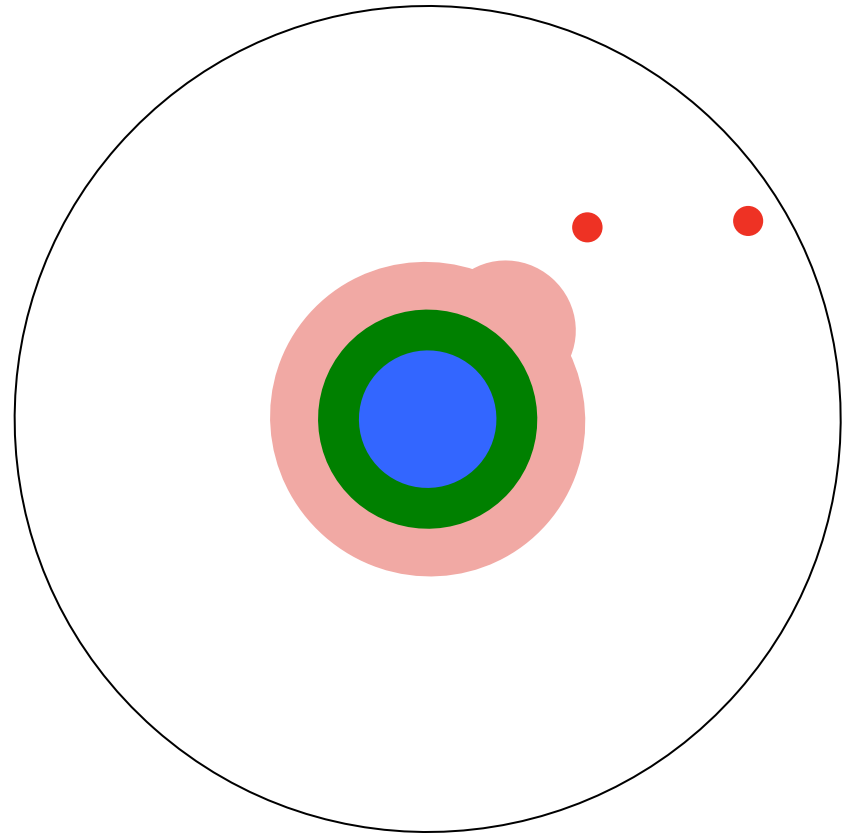
### **Strategy 3:**

Limit your search by  
selecting highly cited papers

You might have found the  
**“key papers”**

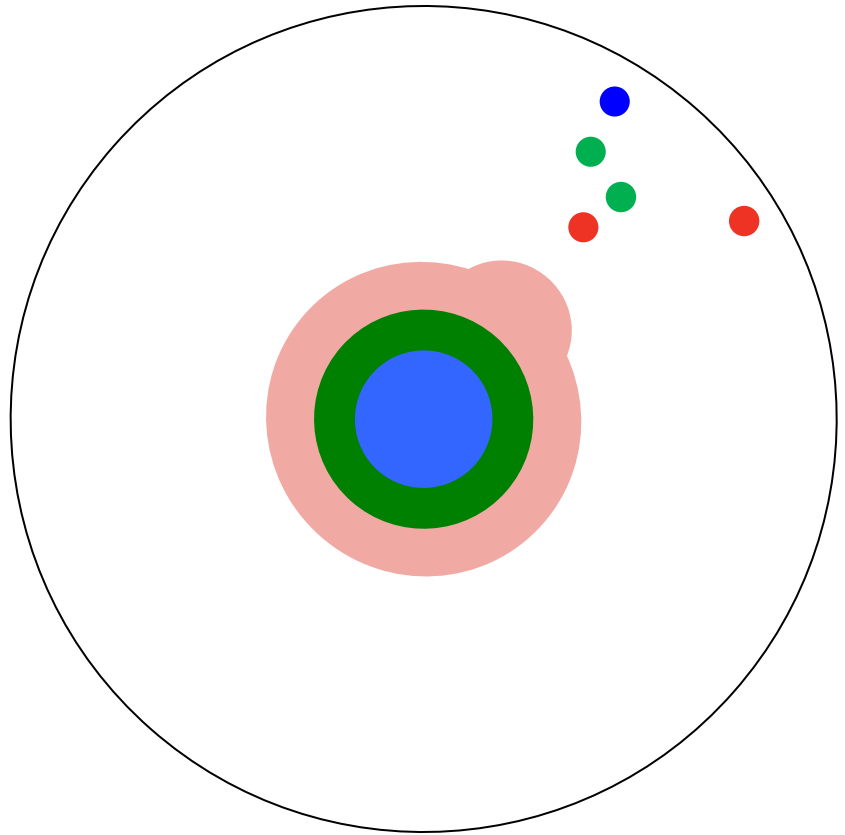


**Strategy 4:**  
Focus on “Top journals”



### **Strategy 6:**

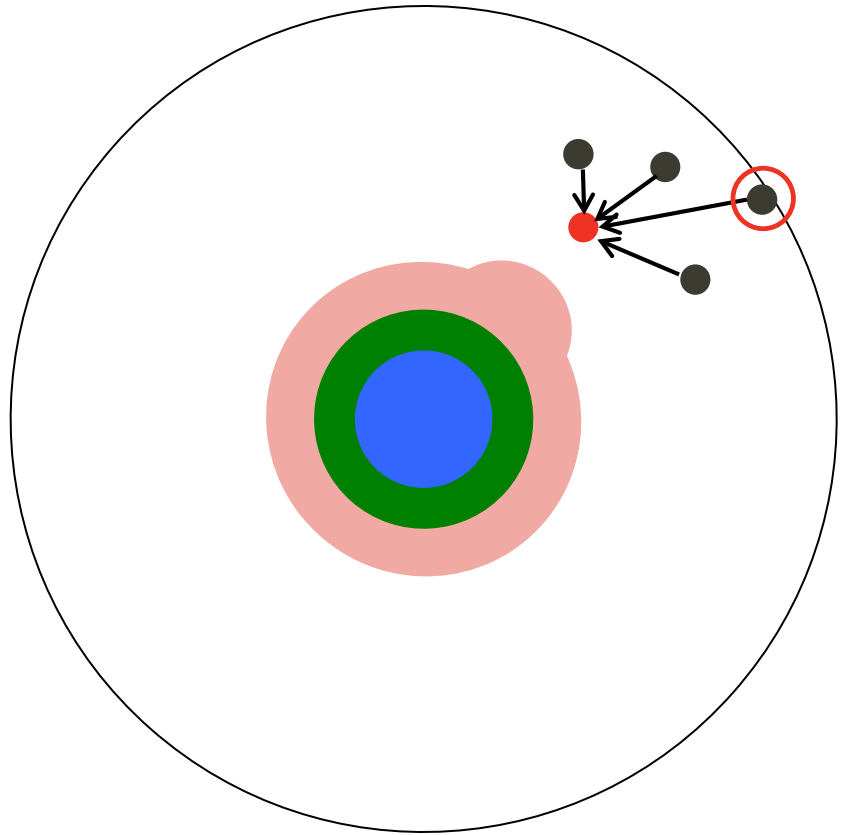
Try another set of keywords  
to have more “**key papers**”



## **Strategy 7:**

Find the papers which have cited the “**key papers**”

You might have reached the frontier !



## The Challenge when writing a lit review is:

We need to demonstrate we are in charge, or “on top of things” when writing a two page review (even although the body of knowledge seems infinite and is always expanding).

How can we demonstrate we are knowledgeable without reading tons of papers?

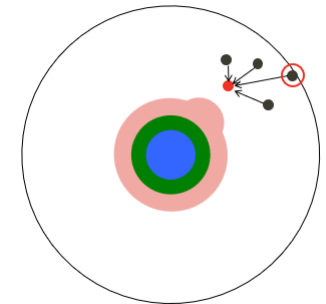
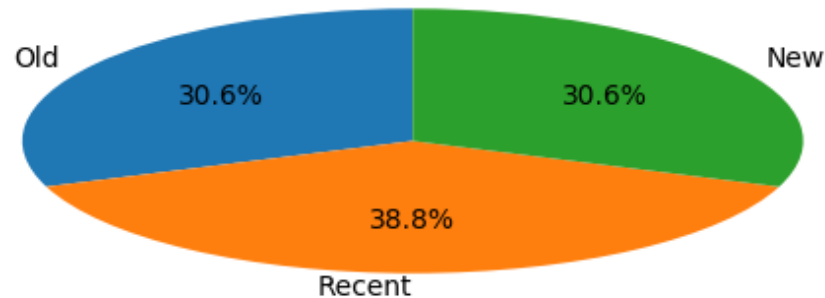
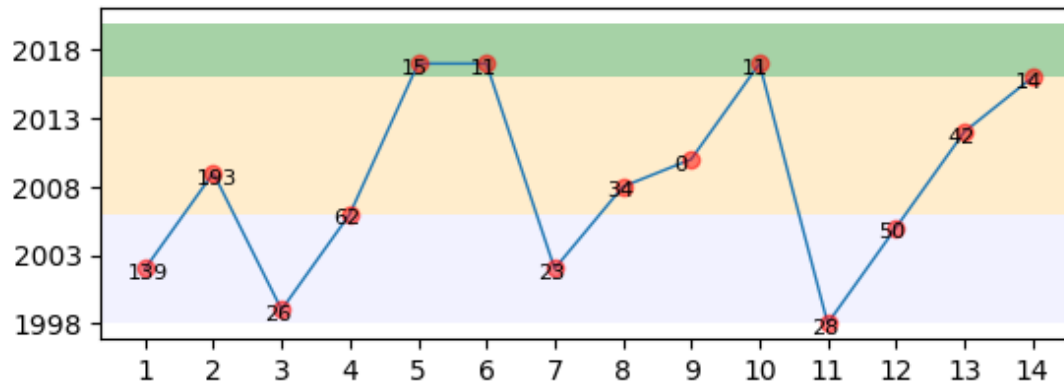
By citing **old (famous)**, **recent** and **new** papers.

If your field is too new:

By citing recent but **well cited** papers, **recent (not well cited)** and **new** papers.

The key is to select the best ones (review articles, well cited, good journals etc).

## A good example of coverage from Assignment 1 submission:



How this diagram may look like for this lit review?

1. What can we observe in terms of distribution? (bottom pie chart)
2. What can we observe in terms of time line / flow? (top xy chart)
3. Can we differentiate groups/ paragraphs?

Remember the template suggestion:

Start paragraph with old or cited paper, end paragraph with a new / less cited paper

Note:

We created some software to extract and plot the citation number for each reference.

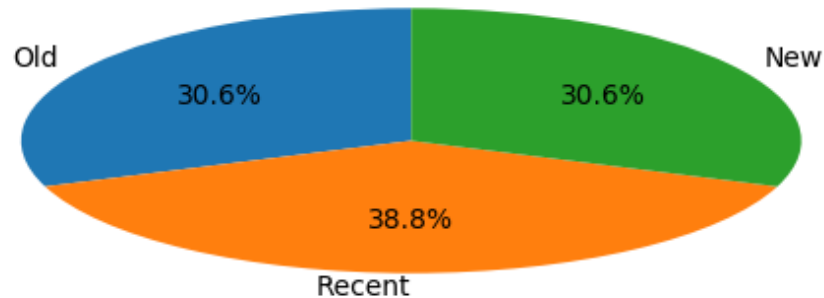
If your references included the DOI citation number is included.

## A good example of coverage.

### 1. What can we observe in terms of distribution? (pie chart)

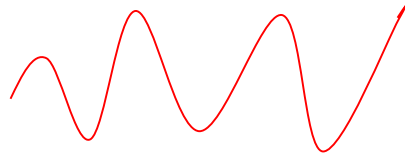
*Equally distributed. The author took care of giving room for old papers (the guru's word), recent and new.*

*The author demonstrates is on charge in terms of what to cite and when to cite.*



### 2. What can we observe in terms of time line / flow? (xy chart)

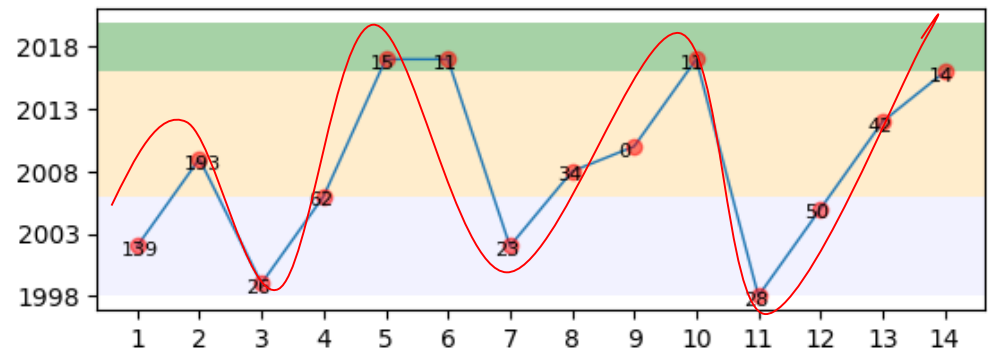
*A zig zag pattern*



### 3. Can we differentiate groups/ paragraphs?

*Yes!*

*See next slide*





A good example of coverage.

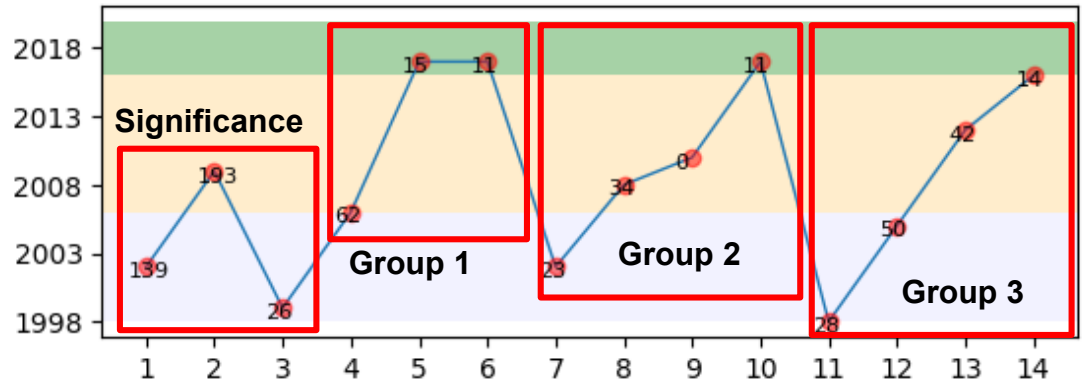
### 3. Can we differentiate groups/ paragraphs?

Yes!

#### **Significance:**

Usually refs 1-3 or 1-4.

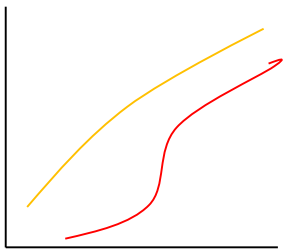
Random pattern is expected here, as we may cite old, recent, new.



As the template suggested:

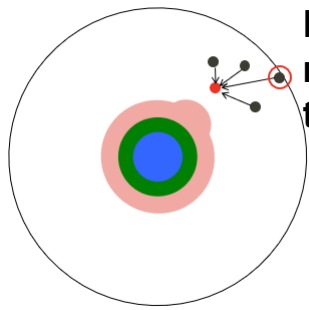
#### **Paragraphs 1 -3:**

Lines increasing in x and y



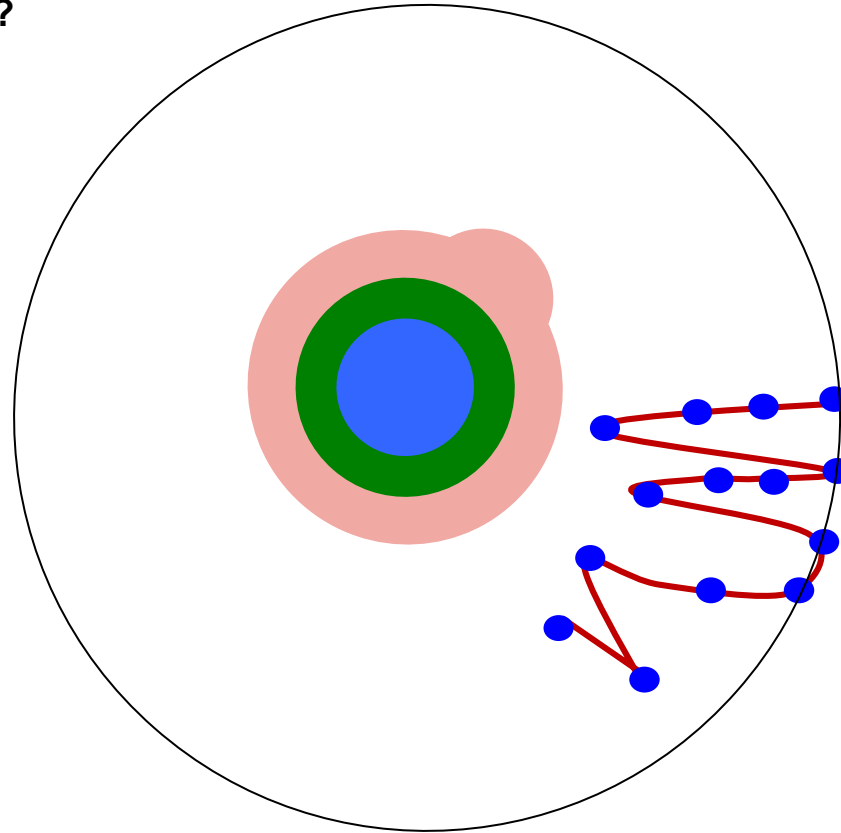
Write 3 paragraphs about the currently available technologies, methods that you can find in the literature.

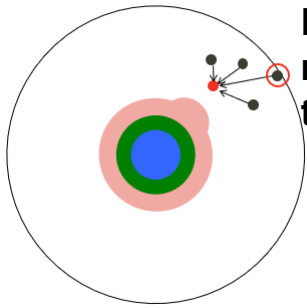
- Find 15-20 references about your research topic, using the techniques discussed in lectures 2 and 3.
- Categorise these references into 3 groups consisting of 3 to 4 references.
- Discuss about each group in a separate paragraph (this means you have 3 paragraphs).
- Each paragraph should ideally start with a highly cited paper, which might have been published 5-15 years ago.
- Newer references will appear towards the end of the paragraph so that they can direct the reader to the frontier, which is what has been published over the past 3 years.
- Explain the evolution of each group through different references.
- In particular, try to find the limitations or disadvantages which led to this evolution.



How this diagram  
may look like for  
this lit review?

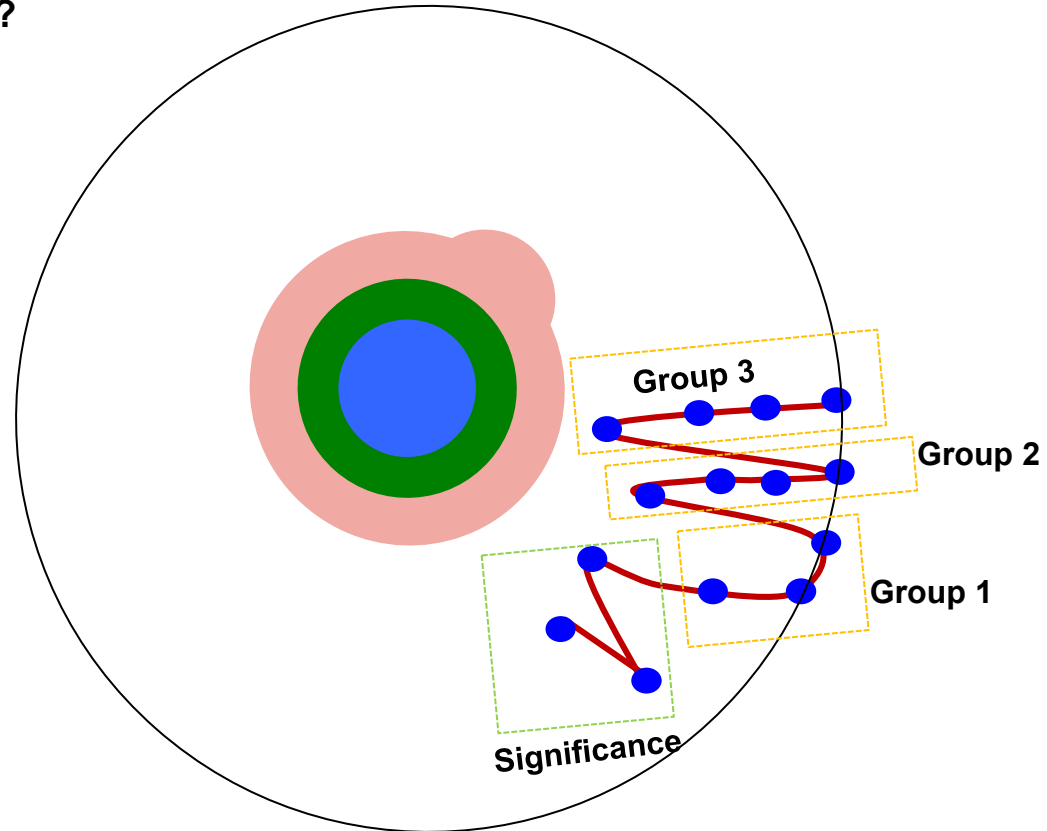
Answer:

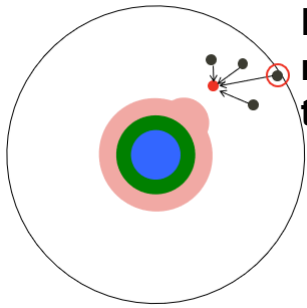




How this diagram  
may look like for  
this lit review?

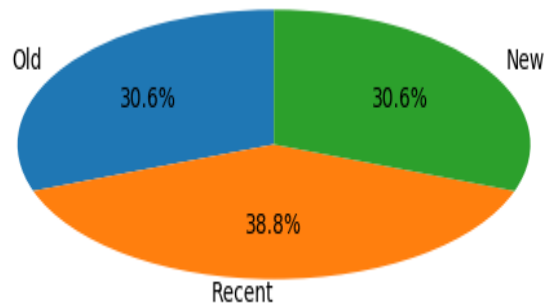
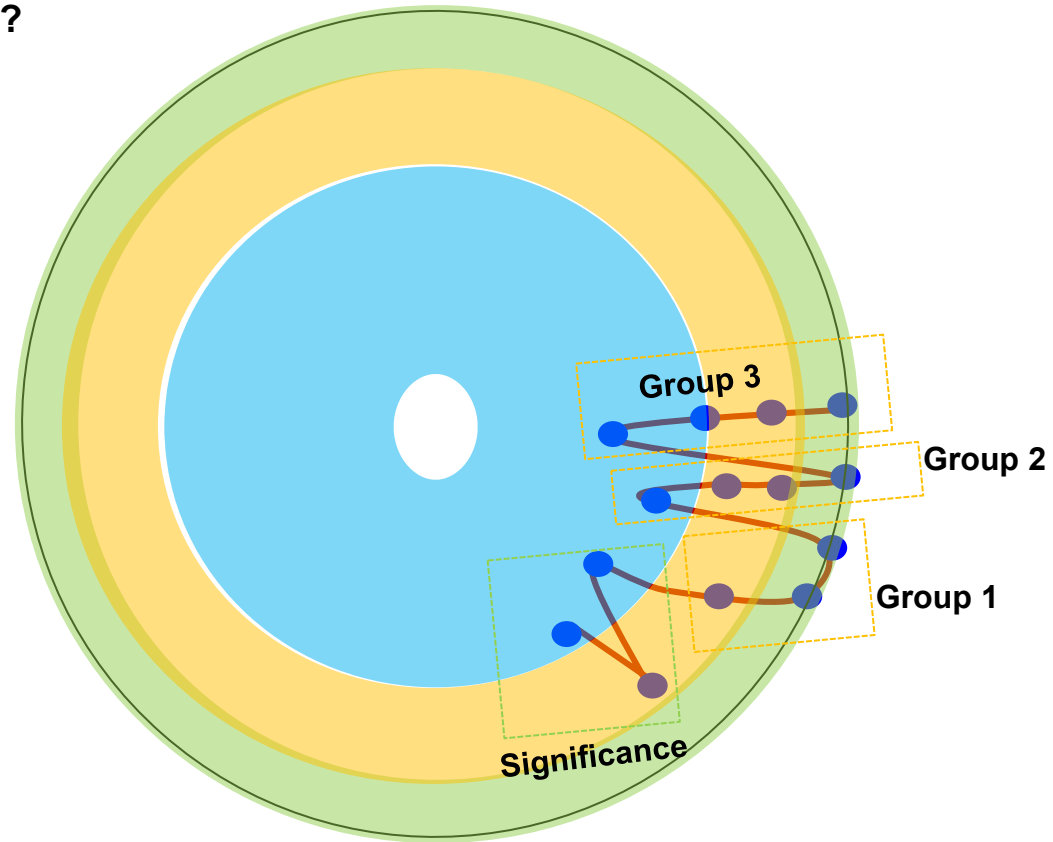
Answer:





How this diagram  
may look like for  
this lit review?

Answer:



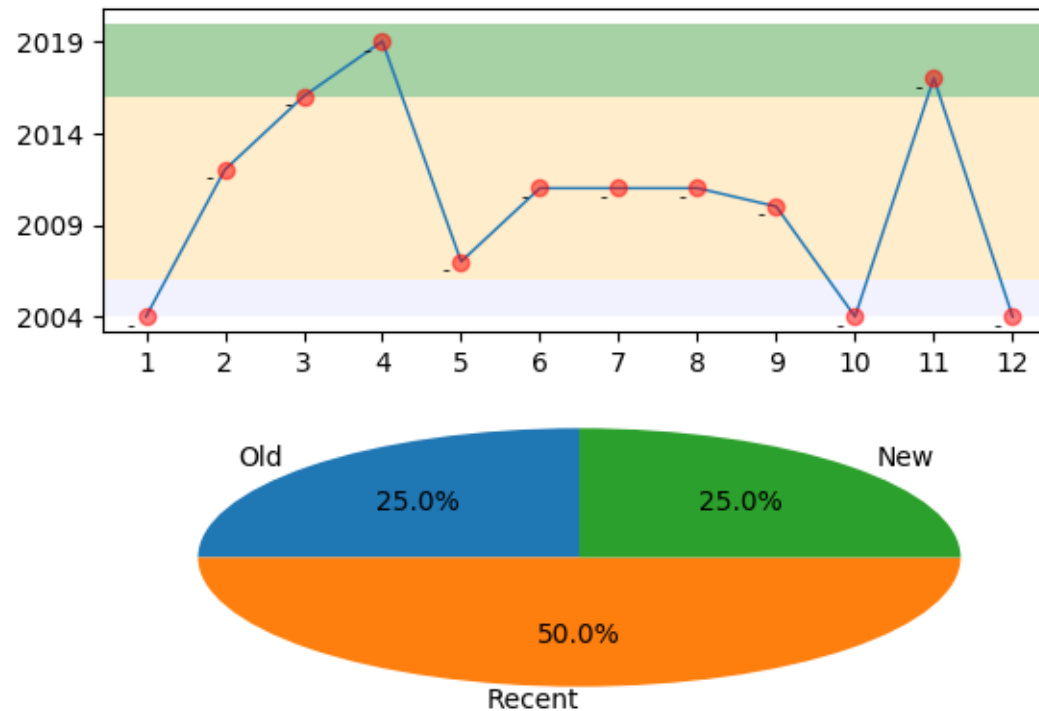
Notice how each group/paragraph has:

*Old papers*

*Recent papers*

*New (frontier)*

## More examples (regular / need improvement)

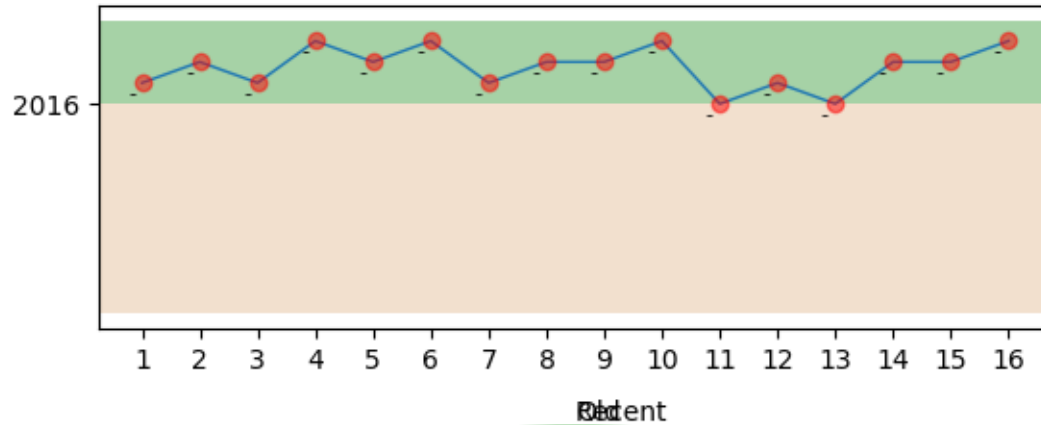


*Group 1 looks good*

*Group 2 is flat.*

*Group 3 needs more detail*

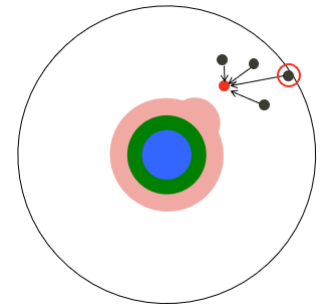
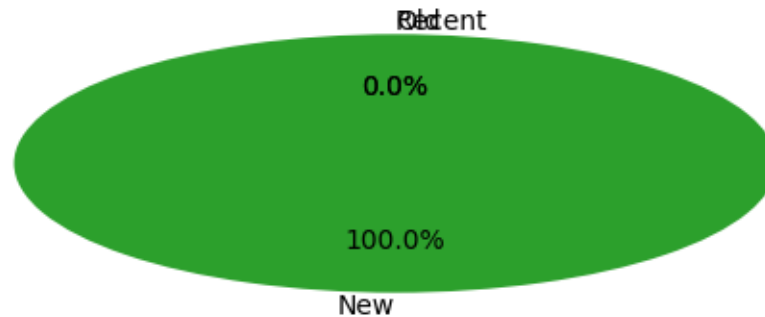
## More examples (regular / need improvement)



No recent / old references.

At a glance it looks bad. However, the field may be too new!

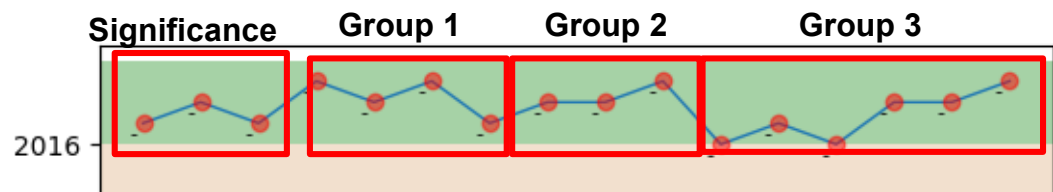
We need to analyse the number of citations!



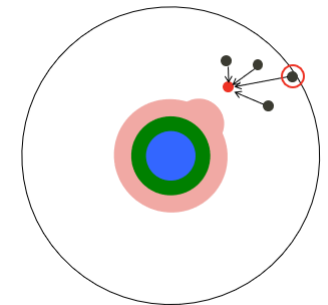
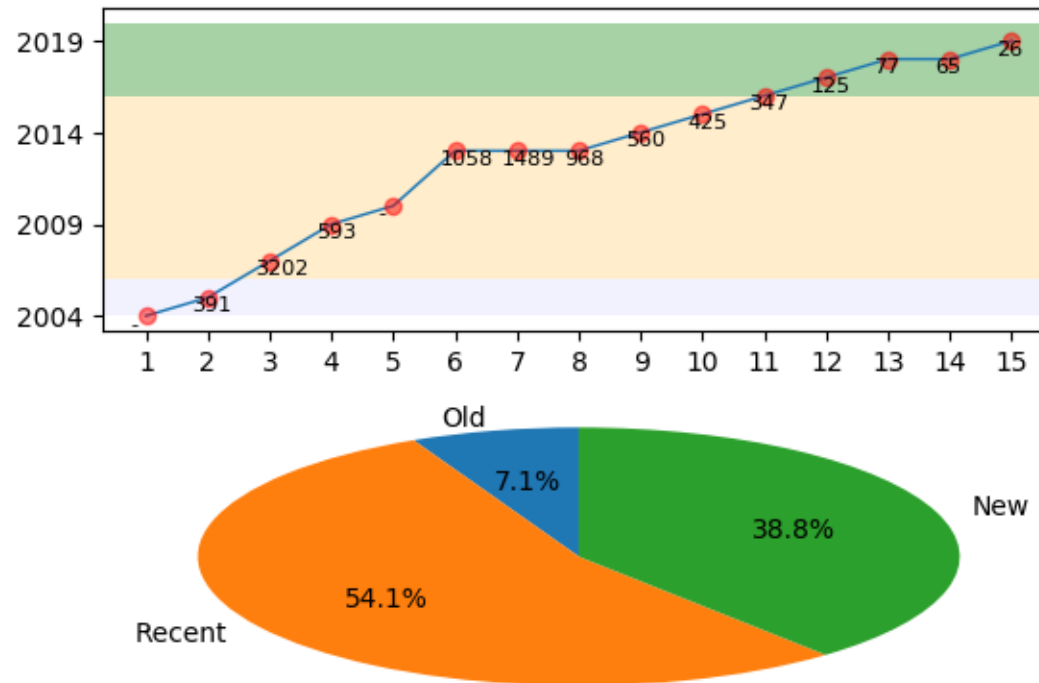
Think how this diagram may look like for this lit review?

Groups are very tight into recent years!

Is not that bad, but we need to invite the gurus in. The first ones publishing the first ideas on The topic /field to have more weight in the text.



## More examples (regular / need improvement)

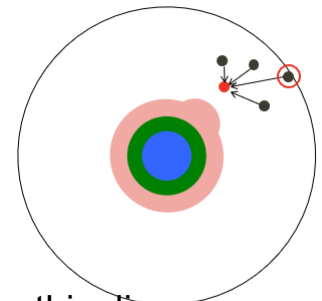
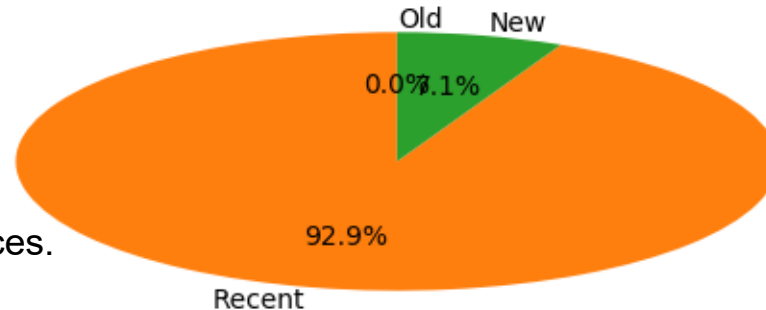
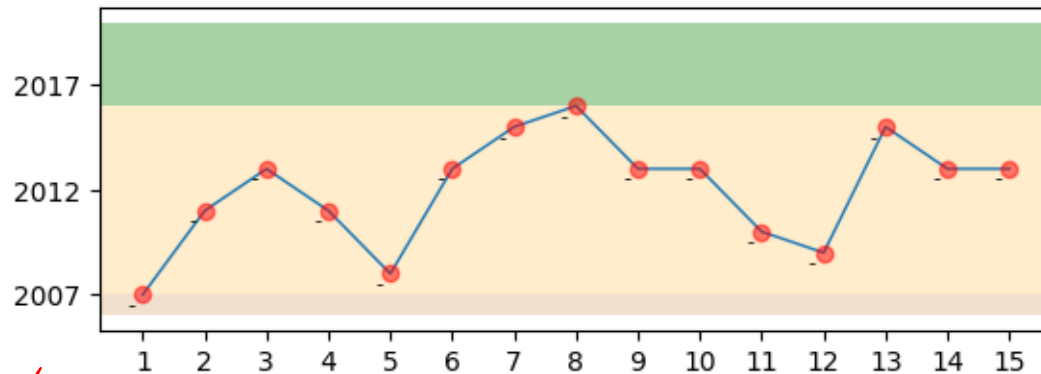
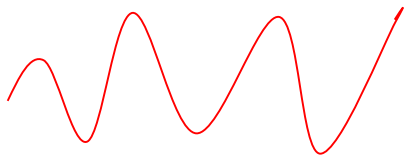


How this diagram should look like for this lit review?

Clearly, an “historical” lit review. However this was not the requirement. Remember: Group the body of knowledge into 3 groups of methods / technologies, then find advantages, gaps, disadvantages. Historical reviews makes difficult to find gaps as newer technologies or methods are usually better. This is good for a Wikipedia (encyclopedia) page.

## More examples (regular / need improvement)

Good structure,  
We can see  
a zig – zag pattern



**However** not many recent references.  
Only 1 (Ref 8).  
Is this relevant? Recent? New?

How this diagram  
should look like for  
this lit review?  
*Answer: Nothing in  
the outer layer*

It may be possible that what you are proposing it has been done already between 2016-2019,

### Suggestions:

- Try to find recent Review Articles
- **Add new keywords**
- **Do a search on a common/famous author in the field to see where people in the field moved to.**



Sessions on week 11 and week 12

Dedicated for feedback on Research Questions and Methodology.

Before requesting feedback, try to improve your Coverage section as shown before

Write down the number of citations for each reference.