

Research Methodology

Research Literature Review
(Article Reading)



Contents

- 1) Literature Review
- 2) Reading Sources
- 3) Where to find Resources?
- 4) Elements of the Paper
- 5) Expected Outcomes from Reading

1) Literature Review

What is Literature Review?

- A review on **major works** of a **narrow topic**
- A comprehensive summary of **previous research** on a topic
- The literature review surveys
 - Scholarly **articles**, **books**, other **sources** relevant to an area of research
- Review produces **snapshots** (capture major concepts of a topic)
- By relating to previous research, the review should be
 - **Enumerated**
 - **Described**
 - **Objectively evaluate**
 - **Clarified**

Purposes of Literature Review

- Literature review can provide researchers with
 - Improving **understanding**
 - Demonstrating **knowledge**
 - Updating readers' **experience**
- A literature review has **four** main objectives:
 - It **surveys** the literature in your chosen area of study
 - It **synthesizes** the information in that literature into a summary
 - It **critically analyzes** the information
 - It **presents** the literature in an organized way

2) Reading Sources

What to read?

Papers / Journals

International Journal for Science

Title for I
Scien

International Journal for Science And Research in Technology (IJSART) volume X Issue Y-Month

Title fo
Sc

International Journal for Science And Research in Technology (IJSART) volume X Issue Y-Month

Title for paper submitted to International Journal for
Science and Research in Technology (22px)

First Author*, Second Author**, Third Author (11px)**

Abstract- Mention the a
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International Journal for Science And Research in

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Abstract- Mention the abstract for the
brief summary of a research article, the
proceeding or any in-depth analysis of
discipline, and is often used to help the i
paper's purpose. When used, an abstra
beginning of a manuscript, acting as the
given scientific paper or patent application

Index Terms- About four key words or
order, separated by commas. Keywords are used to retrieve
documents in an information system such as
a search engine. (Mention 4-5 keywords)

I. INTRODUCTION

This article guides a stepwise walk
writing a successful journal or a rese
inception of ideas till their publications.
highly recognized in scholar fraternity and form a core part of
PhD curriculum. Research scholars publish their research work
in leading journals to complete their grades. In addition, the
published research work also provides a big weight-age to get
admissions in reputed variety. Now, here we enlist the proven
steps to publish the research paper in a journal.

Identify the constructs of a Journal - Essentially a journal
consists of five major sections. The number of pages may vary
depending upon the topic of research work but generally
comprises up to 5 to 7 pages. These are:
1) Abstract

Abstract- Mention the abstract for the article. An abstract is a
brief summary of a research article, thesis, review, conference
proceeding or any in-depth analysis of a particular subject or
discipline, and is often used to help the reader quickly ascertain
the paper's purpose. When used, an abstract always appears at the
beginning of a manuscript, acting as the point-of-entry for any
given scientific paper or patent application. (10 px)

Index Terms- About four key words or phrases in alphabetical
order, separated by commas. Keywords are used to retrieve
documents in an information system such as an online journal or
a search engine. (Mention 4-5 keywords)

I. INTRODUCTION

This article guides a stepwise walkthrough by Experts for
writing a successful journal or a research paper starting from
inception of ideas till their publications. Research papers are
highly recognized in scholar fraternity and form a core part of
PhD curriculum. Research scholars publish their research work
in leading journals to complete their grades. In addition, the
published research work also provides a big weight-age to get
admissions in reputed variety. Now, here we enlist the proven
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1) Abstract-
inputs from their fellows. It enriches the information pool of your
paper with expert comments or up gradations. And the researcher
feels confident about their work and takes a jump to start the
paper writing.

B. Use of Simulation software

There are numbers of software available which can mimic the
process involved in your research work and can produce the
possible result. One of such type of software is Matlab. You can
readily find Miles related to your research work on internet or in
some cases these can require few modifications. Once these
Miles are uploaded in software, you can get the simulated

- 3) Attend conferences, workshops and symposiums on the
same fields or on related counterparts.
- 4) Understand the scientific terms and jargon related to your
research work.

III. WRITE DOWN YOUR STUDIES AND FINDINGS

Now it is the time to articulate the research work with ideas
gathered in above steps by adopting any of below suitable
approaches:

A. Bits and Pieces together

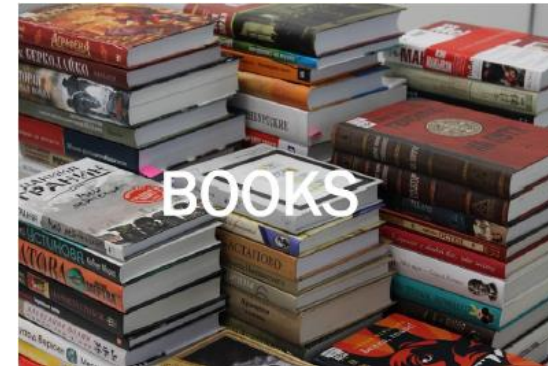
In this approach combine all your researched information in
form of a journal or research paper. In this researcher can take
the reference of already accomplished work as a starting building
block of its paper.

Jump Start

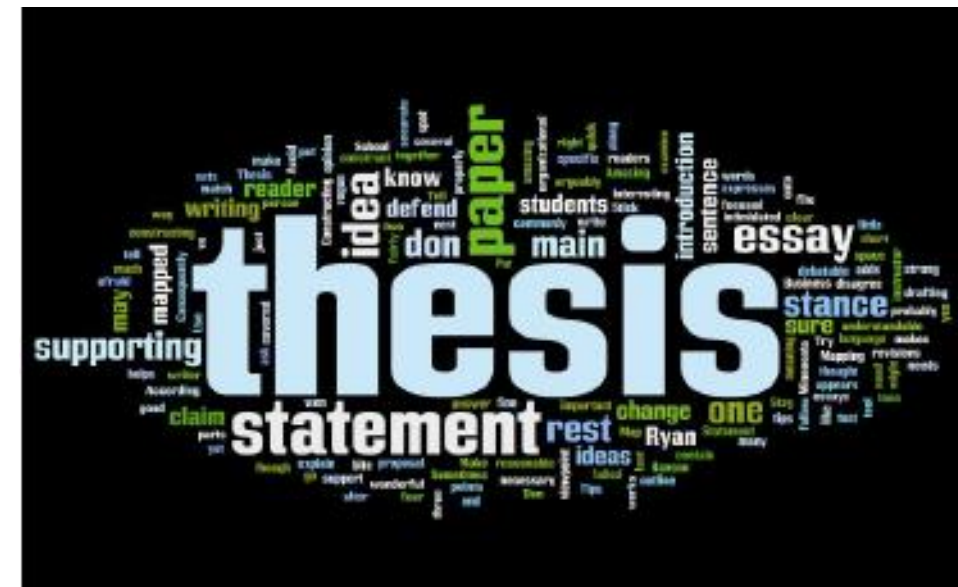
This approach works the best in guidance of fellow
researchers. In this the authors continuously receives or asks
inputs from their fellows. It enriches the information pool of your
paper with expert comments or up gradations. And the researcher
feels confident about their work and takes a jump to start the
paper writing.

B. Use of Simulation software

There are numbers of software available which can mimic the
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Online Resources



Source: Thesis statement, 22 Nov,2016

3) Where to find Resources?

Different Databases of Resource

- Don't always rely on **GOOGLE**
- For **IT** related field:



sci-hub.io



Scientific Search Engine: multidisciplinary



Search millions of free academic articles, chapters and theses.
[Arts | Humanities | Business | Law | Nature | Science | Medical]

"chinit river" evapotranspiration

Search

Web Image

Sort by: Relevance -

[HNPDISCUSSIONPAPER Environmental ...](#)

Cambodia An irrigation project, situated in the **Chinit River** Basin in Kompong Not only will this lead to increased water loss through **evapotranspiration**, but it ...
<https://openknowledge.worldbank.org/.../292550Lindsay11ta10Management1whole.txt?...>

[Environmental management for malaria control in the East Asia and ...](#)

File Format: PDF/Adobe Acrobat

Jun 9, 1999 ... An irrigation project, situated in the **Chinit River** Basin in Kompong Thom this lead to increased water loss through **evapotranspiration**, but it ...
<https://www.openknowledge.worldbank.org/.../292550Lindsay11ta10Management1whole.pdf?...>

[Environmental Management for Malaria Control in the East Asia and ...](#)

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An irrigation project, situated in the **Chinit River** Basin in Kompong Thom Not only will this lead to increased water loss through **evapotranspiration**, but it ...
https://openknowledge.worldbank.org/.../Lindsay-EnvironmentalManagement_whole.pdf

[Fighting poverty through sustainable water use](#)

File Format: PDF/Adobe Acrobat

potential **evapotranspiration**) are analyzed and presented in Awulachew et al. Fish catch (kg) in Stung **Chinit River** System in dry season (DS) and rainy ...
https://cgspace.cgiar.org/.../3708/IFWF2_proceedings_Volume%20III.pdf



Home - Search: Road border top



Scientific Search Engine: specialized

AGRIS



Food and Agriculture Organization
of the United Nations

4) Elements of the Paper

Important Elements in Google Scholar

The screenshot shows the Google Scholar interface with the search query "cambodia wastewater treatment". The results list several articles. Annotations highlight the following elements:

- Google** logo and search bar.
- Scholar** logo.
- Authors/Year** link (circled in red).
- click "Related articles" or "Cited by" under the search result to explore similar articles** (text box with arrows pointing to "Related articles" and "Cited by" links).
- My Citations** button (circled in grey).
- Articles** section (circled in grey).
- My library** button (circled in grey).
- Any time** filter (circled in grey).
- Sort by relevance** and **Sort by date** options.
- include patents** and **include citations** checkboxes.
- Create alert** button (circled in grey).
- [Full text] available from** (text box with arrows pointing to full-text links like "[PDF] from sainsburysebooks.co.uk", "[HTML] from wiley.com", "[PDF] from duke.edu", and "[PDF] from psu.edu").

Search Results:

- Domestic wastewater treatment in developing countries**
D Mara - 2013 - books.google.com
Page 1. Duncan Mara Domestic WASTEWATER Treatment IN DEVELOPING COUNTRIES
Page 2. Domestic Wastewater Treatment in Developing Countries Page 3. Domestic Wastewater Treatment in Developing Countries Duncan Mara Page 4. ...
Cited by 330 Related articles All 5 versions Cite Save
- Organochlorine contamination in fish and mussels from Cambodia and other Asian countries**
I Monirith, H Nakata, M Watanabe... - Water Science and ..., 2000 - wst.iwaponline.com
... Organochlorine contamination in fish and mussels from Cambodia and other Asian countries. ... TS Tana. Department of Fisheries, Ministry of Agriculture, Forestry and Fisheries, # 186, RD Norodom Blvd., PO box 582, Phnom Penh, Cambodia. ...
Cited by 48 Related articles All 7 versions Cite Save
- Faecal and protozoan parasite contamination of water spinach (Ipomoea aquatica) cultivated in urban wastewater in Phnom Penh, Cambodia**
VT Anh, NT Tram, LT Klank, PD Cam... - Tropical Medicine & ..., 2007 - Wiley Online Library
... In developing countries like Cambodia, it is difficult to establish formal wastewater treatment because treatment plants are expensive to operate and maintain, and farmers often prefer to use untreated wastewater because of its high nutrient content. ...
Cited by 49 Related articles All 8 versions Cite Save
- The challenges of wastewater irrigation in developing countries**
M Qadir, D Wichelns, L Raschid-Sally... - Agricultural Water ..., 2010 - Elsevier
... aquaculture in Africa, and in Central, South, and Southeast Asia (Bangladesh, Cambodia, China, India ... In many areas, treated wastewater is used for fodder production, groundwater recharge or ... In other areas, large wetland areas are misused as natural treatment facility, like at ...
Cited by 212 Related articles All 15 versions Cite Save
- Arsenic removal from water/wastewater using adsorbents—a critical review**
D Mohan, CU Pittman - Journal of hazardous materials, 2007 - Elsevier
Arsenic's history in science, medicine and technology has been overshadowed by its notoriety

Elements of the Paper

Title (+ sub-title)

Authors

- 1) Abstract
- 2) Keywords
- 3) Introduction
- 4) Literature Review
- 5) Methods/Proposed solution
- 6) Results/Implementation
- 7) Discussion
- 8) Conclusion & Future Work



Source: Thesis structure, 22 Nov, 2016

An Example of Elements of the Paper

SemSearch: A Search Engine for the Semantic Web

Yuangui Lei, Victoria Uren, and Enrico Motta

Knowledge Media Institute (KMi), The Open University, Milton Keynes,
{y.lei, v.s.uren, e.motta}@open.ac.uk

Abstract. Semantic search promises to produce precise answers to user queries by taking advantage of the availability of explicit semantics of information in the context of the semantic web. Existing tools have been

1 Introduction

One important goal of the semantic web is to make the meaning of information explicit through semantic mark-up, thus enabling more effective access to knowledge contained in heterogeneous information environments, such as the web. Semantic search plays an important role in realizing this goal, as it promises to

2 State of the art

In this section, we investigate how current semantic search approaches address user support. We have identified four categories of semantic search engines, according to the user interface they provide: i) *form-based search engines*, which provide sophisticated web forms that allow users to specify queries, in the format

3 An overview of SemSearch

One major goal of this work is to hide the complexity of semantic search from end users and to make it easy to use and effective for naive users. To achieve this goal, we identified the following key requirements:

- **Low barrier to access for ordinary end users.** Our semantic search engine should overcome the problem of knowledge overhead and ensure that ordinary end users are able to use it without having to know about the

4 The Google-like query interface

The query interface of SemSearch extends traditional keyword search languages by allowing the explicit specification of i) the queried subject and ii) the combination of keywords. By the term *subject*, the user can explicitly tell the search engine the expected type of the search results. For example, when the user specifies the keyword “news” as the subject keyword, he or she expects the search results to be the instances of the class entity that matches against the keyword “news”. By allowing the specification of how to combine multiple keywords, the

5 Making sense of the user query

As mentioned earlier in Section 3, making sense of the user query is the first step of the search process in SemSearch, whose task is to find out the semantic meanings of the keywords specified in a user query so that the search engine knows what the user is looking for and how to satisfy the user query.

6 Translating the user query into formal queries

In this step, the search engine takes as input the semantic matches of user search terms and outputs an appropriate formal query according to the semantic meanings of keywords. To achieve this task, the search engine needs to capture the focus of the user query (i.e., the type of the expected search results). As described earlier in Section 4, the subject keyword specifies the type of the expected search result. Thus, it is reasonable to expect that the queried subject

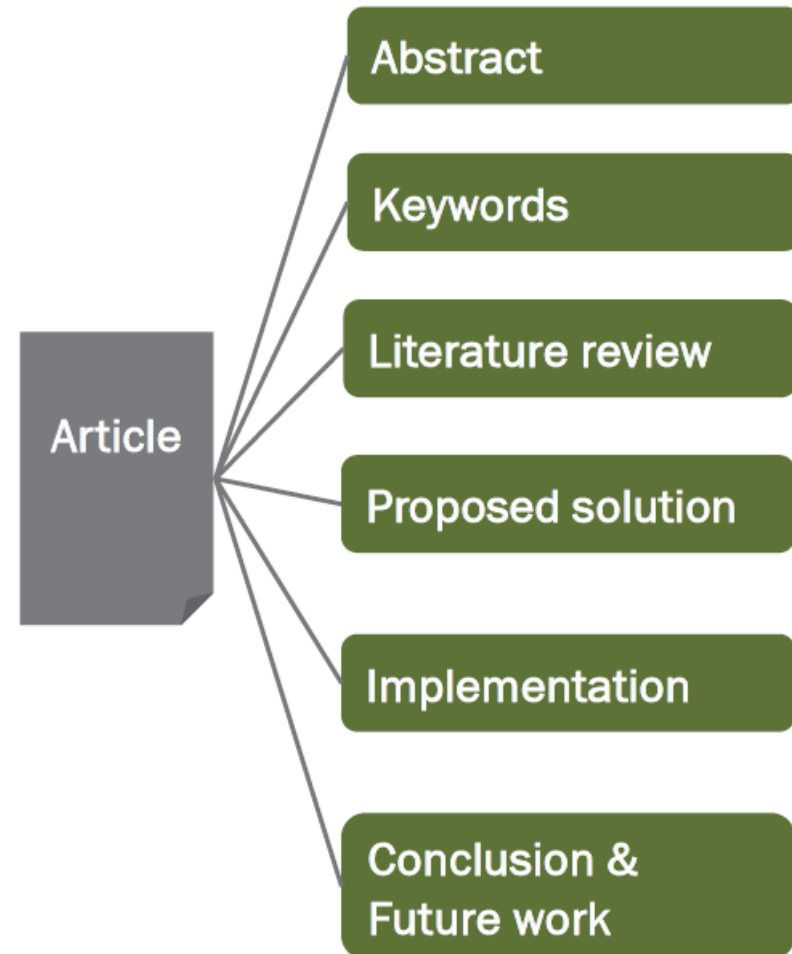
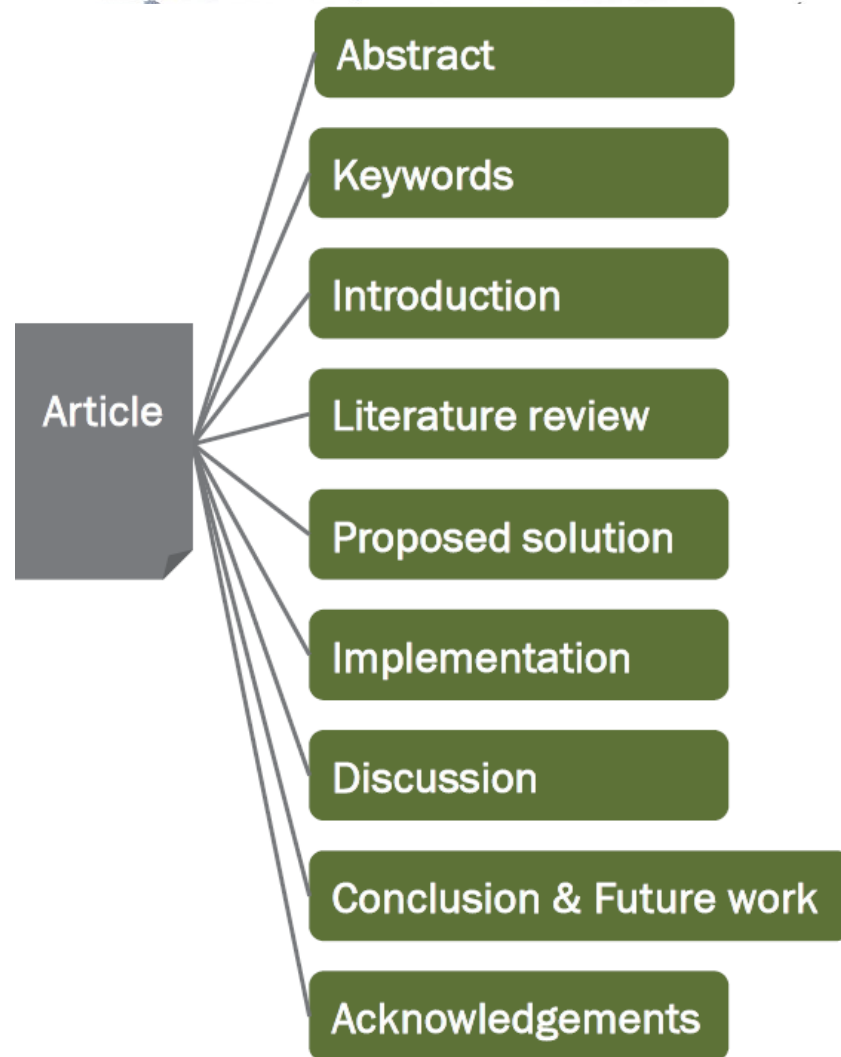
7 Implementation and experimental evaluation

A prototype of SemSearch has been implemented, which uses Sesame and Lucene⁴. Sesame provides a query language and a query engine for semantic data represented in RDF. Lucene provides a fast text search engine, which is used to build the semantic entity index engine and the semantic entity search engine contained in the Text Search Layer of SemSearch.

8 Conclusions and future work

The core observation that underlies this paper is that, in the case of semantic search that promises to produce precise answers to user queries, it is important to ensure that it is easy to use and effective for ordinary end users who are not necessarily familiar with domain specific semantic data, ontologies, or SQL-like

Other Elements of the Paper



Article – Abstract

- An **overview** of the whole work
- Or **summary** of the main contribution
- Length: **150** to **300** words
- Write at the end (write other points first)
- Writing an abstract must answer the question
 - **What this paper is talking about?**

Article – Introduction

- Introduction of an article includes:
 - Background to the topic
 - Brief review of current knowledge
 - Indicates gap in knowledge
 - States aim of research and how it fits into the gap
 - Can include hypotheses
 - Can include an outline of the following chapters
- Writing an introduction must answer these questions
 - What is the background related to this work?
 - What are the gaps?

Article – Literature Review

- Writing a literature review must answer these questions
 - What are the existing methods? frameworks?
 - Where are they applied?
 - What are the limitations?
 - What are the current work? limitations?

Article – Proposed Solution

- Your proposed solution
- Writing a proposed solution must answer these questions
 - What, when, where, how, why you did?
 - What you did to get your results?
 - What are the contributions?

Article – Implementation

- How did you implement your solution?
 - Programming language
 - Tools
 - Case study
 - Training data and testing data
- Writing an implementation must answer the question
 - What is the output of your research work?

Article – Discussion

- How to make a good discussion?
 - Comment on your results
 - Explain what your results mean
 - Interpret your results in a wider context
 - Indicates which results were expected or unexpected
 - Provides explanations for unexpected results
- Writing a discussion must answer the question
 - What do you think from what you got?

Article – Conclusion

- How to make a good conclusion?
 - Achievement
 - Significant results
 - Note the limitations
 - Making suggestions for further research
- Writing a conclusion must answer these questions
 - What is the research solution?
 - What problems it solve? Any limitations?

Article – Future work

- How to make a good future work?
 - Stating your next step or work
 - Making suggestion for improving the result
- Writing a future work must answer the question
 - What are your future work?

Article – Acknowledgement

- Acknowledgement refers to
 - Sponsors
 - Supporters
- Writing an acknowledgement must answer the question
 - Who support you?

Summary – Paper

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Title:

Authors:

Research problem:

Research objective:

Contribution(s):

Case study:

Critical analysis: why this method?

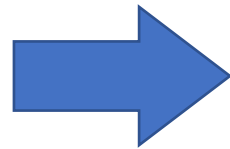
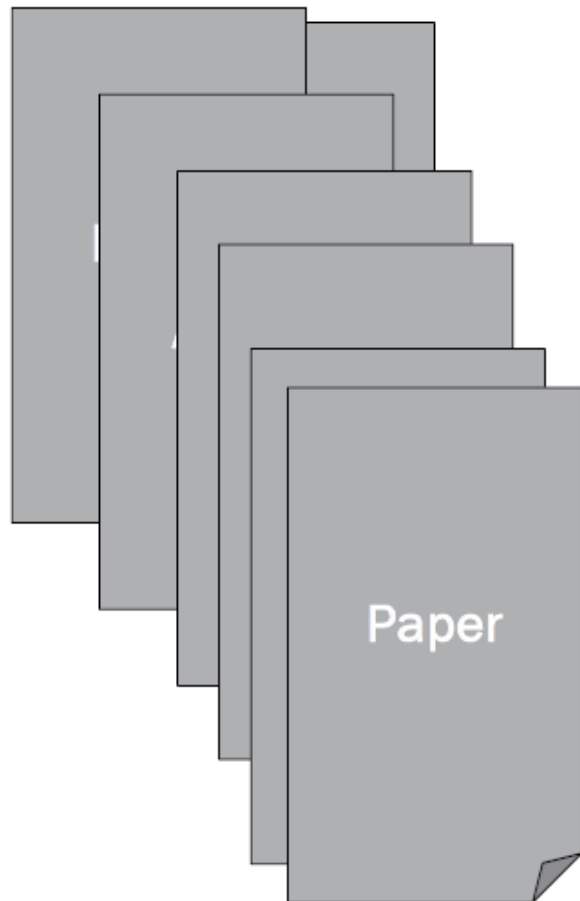
Adaptation: Can this contribution be applied in your research?

Summary: useful content if needed

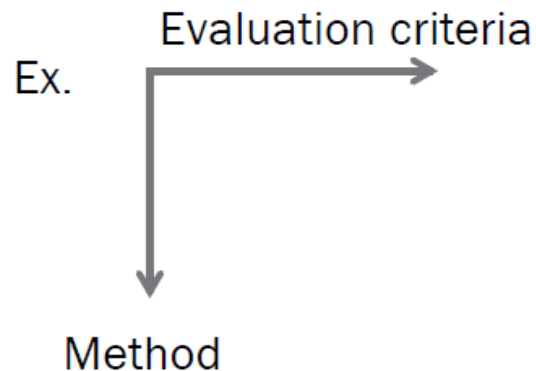
5) Expected Outcomes from Reading

Comparison Table of Existing Methods

Reading



Comparison Tables



An Example of Methods Comparison

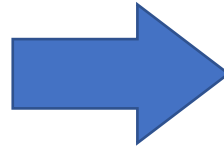
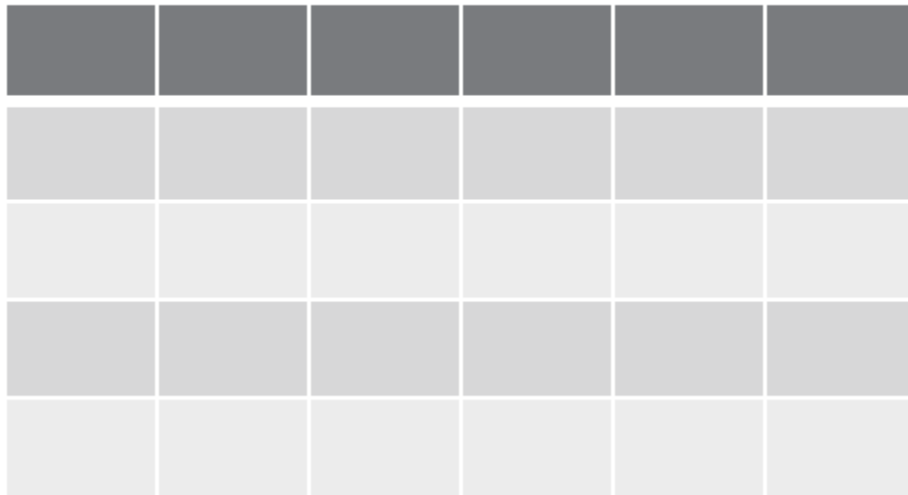
Papers	Network centrality				QoS	QoS change values	Shortest Path	Heuristic Algo.	Sequence (S)/ Parallel (P)
	Degree	Closeness	Betweenness	Eigenvector					
Hashemian and Mavaddat, 2005							X		S
Arpinar et al., 2005							X		S
Talantikite et al., 2009					X				S&P
Oh et al., 2009								X	S
Yang et al., 2010					X				S
Bansal et al., 2010	X				X		X		S
Rodriguez-Mier et al., 2011							X	X	S&P
AlShawi et al., 2012								X	S
Shang et al., 2013					X				S
Sun et al., 2013					X				S
Xu et al., 2014	X	X	X	X					S
Liu et al., 2014					X				S&P
Rostami et al., 2014					X				S
Galore and Niyogi, 2014					X		X		S&P

Benefits from Reading

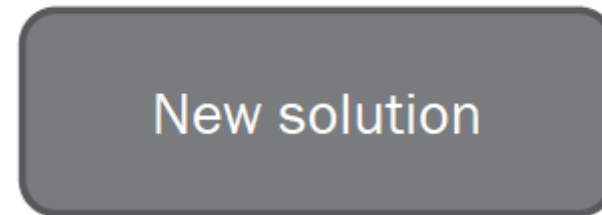
- After reading papers, researcher(s) are able to
 - Understand **existing solutions, applications, frameworks, limitations**
 - Obtain **experimental data** or **use case** scenarios to be used
 - Publish an **article**
 - Obtain ideas to propose the **new solution**

What to do after reading?

Existing works



Proposed new solution/
Improve existing solution



Ex.

- New method
- New architecture/framework
- Improved version

Types of Reading and Order

- There are several types of reading
 - **Scroll reading**: give a quick look on the whole paper
 - **Partial reading**: pick some important parts to read
 - **Full reading**: read the whole detail
- Article reading order (suggestion)
 - **Abstract**
 - **Conclusion**
 - **Contribution**
 - **Literature review**