



# CS 3201N – CS Thesis 1 (Data Gathering)

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# What is Thesis?

- Refer to the activity of a diligent and systematic inquiry or investigation in an area, with the objective of discovering or revising facts, theories, applications etc.
- The goal is to discover and disseminate new knowledge.
- The output is original.

# Parts of CS Thesis 1

1. Title Page
2. Abstract
3. Chapter 1 Introduction
4. Chapter 2 Review of Related Literature
5. Chapter 3 Technical Background
6. Chapter 4 Design and Methodology
7. Bibliography
8. Appendices (Transmittal Letter, Interview Guide, Software Requirements Specifications)
9. Curriculum Vitae

# What is Review of Related Literature?

- Use of published ideas for the following purposes:
  - To justify the particular approach to the topic;
  - To justify the selection of methods;
  - To demonstrate that this research contributes something new (i.e., adding to the body of knowledge)

# What is Review of Related Literature?

- Review related literature and systems (Library Work)
- Find out what has been done by whom, when and how, and what has not been done or missing (gaps).
- Read and review at least 20 journals from ACM and other USC Online Journals available in ISMIS as source of information.

# Review of Related Literature

- Is an examination and discussion of the literature and systems in a given area of study.
- It is a concise overview of what has been studied, argued, and established about a topic, usually organized chronologically or thematically.
- It is more than an annotated bibliography or a summary, because you are organizing and presenting your sources in terms of overall relationship to your own study.
- It evaluates previous and current research in regards to how relevant or useful it is and how it relates to your own research

# Steps in Literature Review

- Systematic way of following the **input-processing-output** model
- Literature review process:
  - sequential steps to collect, know, comprehend, apply, analyze, synthesize, and evaluate quality literature in order to provide a firm foundation to a topic and research method.

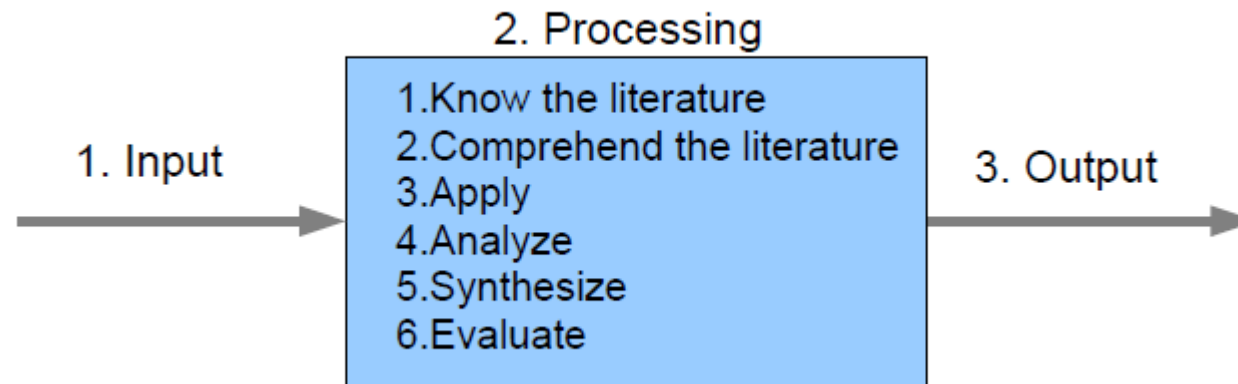
# Literature Review Process

- The output of a Literature review process should demonstrate that the proposed research contributes something new to the overall body of knowledge.



# Body of Knowledge

- Refers to the cumulative research-supported knowledge achieved by “building on each other's research results.”



# Where to find literature?

- Published Articles in Refereed International Journals
- Published Articles in Refereed National Journals
- Published Articles in Peer-Reviewed Proceedings of Conferences
- Papers in Conferences
- Paper Repositories
- Theses, Dissertations, Technical Reports



# Where to find literature?

## USC Library System




- Online Subscriptions
  - ACM Digital Library
  - EBSCO HOST
  - Elsevier - ScienceDirect
  - SCOPUS
  - Springer Link (e-journal)
  - Philippine e-Journals
  - Wiley Online Library

# USC Library System

- <http://library.usc.edu.ph/ezproxy>
- <https://www.facebook.com/usclibrarysystem>

## 3 EZ Ways to Access our E-Resources

- 01** Go to the log in page  
<http://library.usc.edu.ph/ezproxy>  
and click "Register" to register for an EZProxy account. This is a one-time registration every semester/term.  

- 02**  Wait for your account to be activated within 24 hours upon registration.
- 03**  Go back to the log in page and use your USC ID number as the User ID and Password

Email us for clarifications.  
[libdirector@usc.edu.ph](mailto:libdirector@usc.edu.ph)

# USC Library System

- For more information about the library schedule for the 2<sup>nd</sup> Semester, AY 2022-2023



A yellow rectangular sign with rounded corners, hanging from a black metal frame with a yellow circular fastener at the top. The sign has the text "YES, WE ARE" in small black letters, "OPEN" in large bold black letters, and "FOR THE 2ND SEMESTER A.Y. 2022-2023" in small black letters at the bottom.

**MONDAY - SATURDAY**  
EFFECTIVE JANUARY 23, 2023

JBLRC	7:30 A.M. – 5:00 P.M.
BONK LIBRARY	7:30 A.M. – 5:00 P.M.
SED/SHS SC LIBRARY	7:30 A.M. – 5:00 P.M. SATURDAY 8:00 A.M. - 12:00 NN 1:00 P.M. - 5:00 P.M.
LAW LIBRARY	8:00 A.M. – 7:30 P.M. SATURDAY 8:00 A.M. - 5:00 PM
AMERICAN CORNER	8:00 A.M. – 5:00 P.M.



The logo of the University of San Carlos (USC) Library System, featuring the letters "USC" in a stylized font with "LIBRARY" underneath.

# Where to find literature?

- [www.arxiv.org](http://www.arxiv.org)
- [citeseer.ist.psu.edu](http://citeseer.ist.psu.edu)
- [scholar.google.com](http://scholar.google.com)
- [www.doaj.org](http://www.doaj.org)
- [www.osti.gov/eprints](http://www.osti.gov/eprints)

## CATCH-ALL

- [www.google.com](http://www.google.com)

# What is the content of related review of literature?

- An organizational pattern that combines both summary and synthesis to give new interpretations of old material or combine new with old interpretations.
- A tracing of the intellectual progression of the field, including major debates.
- An evaluation of the sources and an advise to the reader on which of the materials cited are the most pertinent or relevant in the thesis project.

# What is the content of related review of literature?

- A review of related systems contains description of existing systems that are relevant to the propose thesis project.
- Discussion of specific features of other systems that you intend to replicate and improve will help define what is to be expected in your project.



# Format of Review of Related Review of Literature

- A logical flow of ideas
- Current and relevant references with consistent, appropriate referencing style
- Proper use of terminology
- An unbiased and comprehensive view of the previous research on the topic

# Suggestion in Organizing the Related Review of Literature

- Describe the problem being researched. The first few sentences or paragraph describe the problem, issue or question the research project is focusing on.
  - at least containing 20-30 author citations for undergraduate thesis (Masters may contain at least 50, PhD at least 100)
- Begin by describing the current research on the topic.
- Usually starts in general and gradually progresses into published research most related to your specific project's emphasis.
- Describe the general themes in the research related to your topic. Any gaps in the published research is noted, particularly if the project addresses the gaps.

# Suggestion in Organizing the Related Review of Literature

- The specific hypotheses or questions of the project is focused on. The literature review moves from what is currently published and known about the topic to what your project is going to add to the topic.
- Include why the particular project's focus is important and how it differs from previous research on the topic.

# Figures and Tables

- You may present figures and tables if necessary in this section.
- Figures must be labeled.
- Figure labels are placed at the bottom of the figure center aligned.
- Table labels are placed at the top of the table and left aligned.

# Figures and Tables

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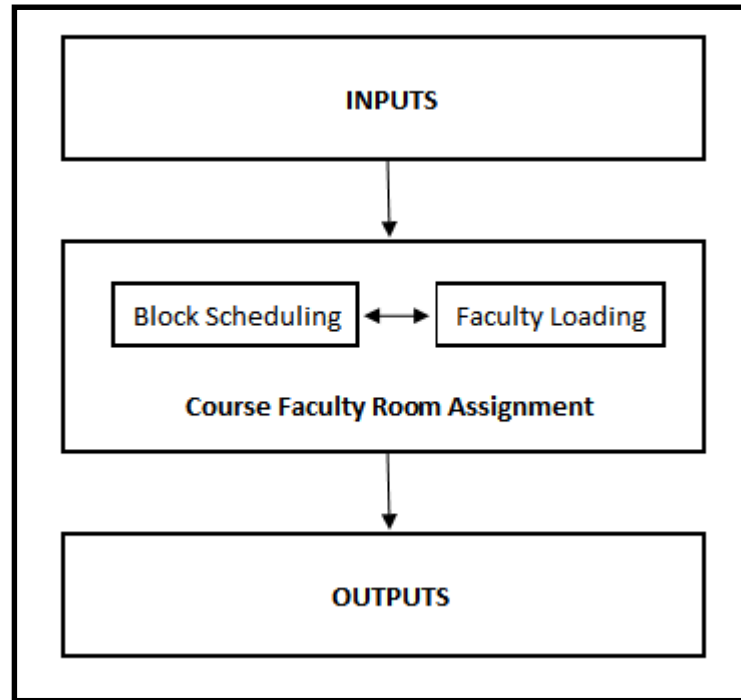


Figure 1. Automated Block Scheduling and Course-Faculty Timetabling System Model

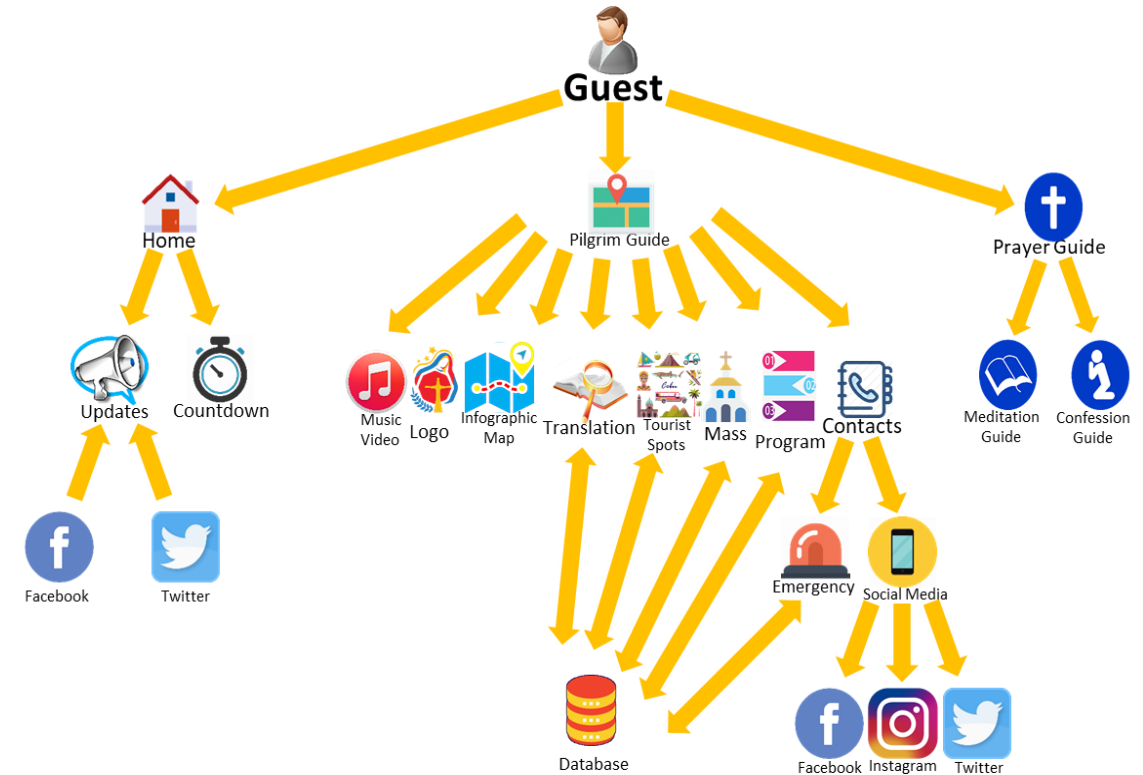


Figure 1. Guest Conceptual Framework

# Example of a Table

Table 1  
*Comparison of Course and Faculty Scheduling Researches*

No	Authors & Research Title	Features	With Predefined Grouping of Courses	Simultaneously processed?	Are Constraints GENERAL or SPECIFIC	Preference	
						Faculty	Student
1	Gunawan, Ng & Leng 2007 <i>Solving the Teacher Assignment Course Scheduling Problem by a Hybrid Algorithm</i>	Course & Faculty Timetabling	NO	YES	SPECIFIC	YES	NO
2	Hsu & Chao 2009 <i>A Two-Stage Heuristic Based Course-Center Faculty Scheduling Model for Increasing Departmental Performance</i>	Course & Faculty Timetabling	NO	NO	SPECIFIC	YES	YES
3	Sagiri 2009 <i>Mathematical Course Scheduling with Hierarchical Programming and Analytic Hierarchy Process</i>	Course & Faculty Timetabling	YES	NO	SPECIFIC	YES	NO

Table 1  
*Summary of Related Systems*

System/Functionalities	Android	iOS	Information	Web	Tracker	Data Extraction	Travel Guide	Translator	Prayer Guide
Google Maps	✓	✓		✓	✓				
Grab/Angkas/Uber	✓	✓			✓				
City Mapper	✓	✓	✓	✓		✓			
KuITOURa	✓	✓	✓				✓		
Google Translate	✓	✓		✓				✓	
PollDaddy/ SurveyMonkey/SurveyLegend			✓	✓					
Google Forms	✓	✓	✓	✓					
Facebook Ads Manager	✓	✓	✓			✓			
Smarp	✓	✓				✓			
Tasky Portable	✓	✓	✓						
FOX Sports App	✓	✓	✓						
TripLingo	✓	✓					✓	✓	
Grenadine	✓	✓	✓			✓			
Olo	✓	✓	✓						
Catholic Confession Guide	✓	✓							✓
Consciousness Examen	✓	✓							✓
KAABAY	✓	✓	✓	✓	✓	✓	✓	✓	✓

# Hint in writing and organizing related review literature:

- The literature review is not a respectful acknowledgement of those who have done related work, but *rather a record of the researchers' attempts to answer the questions using the existing literature*.
- It should **not** be enumerative and need not be comprehensive. Rather, it should be a selective but representative choice of materials relevant to your research problem.
- It is not a “parade” of related and unrelated materials taken from various sources about the topic ; rather it is a “fora of arguments” presented in a way that coherently describes the current research context in which you want to make a contribution.



# The purpose of related review literature:

- Demonstrate the key theories, arguments and controversies in the field.
- Highlight the ways in which the research area has been investigated to date.
- Identify inconsistencies and gaps in knowledge that are worthy of further investigation.

# The purpose of related review literature:

Punch (2000) suggests three guiding questions for identifying the appropriate literature for a research study:

- What literature is relevant to the project?
- What is the relationship of the proposed study to its research literature?
- How will the proposed study use the literature?

# Example of Related Review of Literature

## REVIEW OF RELATED LITERATURE

This chapter contains a list of research works done by others that provide insight on the researchers' study. This also contains methods that have already been studied and they aided the researchers in their methodology as well. The works listed here may not be directly related, but they gave an overview to what the study is about.

### **Connectivity-aware minimum-delay geographic routing with vehicle tracking in VANETs**

The study done by Shafiee and Leung (2011) proposed a new protocol for vehicular ad hoc networks (VANETs) to aid in adapting to the continuously changing network status of road networks with connectivity-aware minimum-delay geographic routing (CMGR). In a sparse network, CMGR maximized the chance of packet reception. In a dense network, CMGR determined routes with adequate connectivity and select the route with minimum delay.

Cebu City and Mandaue City often faces a big problem with traffic and accidents may happen on the road. CMGR was utilized as a way to gauge the severity of road traffic in certain networks. This way, the program quickly found alternate routes to use for traveling and reduce time.

### **A Proposed Algorithm for Finding the Minimum Cost of Traveling in the Philippines**

Cuervas, Otero, and Jos (2017) proposed an algorithm that combined the farthest insertion algorithm and Dijkstra's algorithm, creating a variation of the Traveling Salesman Problem in a graph. Vertices in the graph are regions in the Philippines, in each vertex are sub-vertices representing the various provinces and cities within the region. The study generated a tour visiting all or a selected number of regions in the Philippines once, with the tour having the least cost or its approximation.

The researchers scaled down the graph by making the vertices represent the different cities and sub-vertices be the streets. This helped translate the algorithm into the program to create an alternate route for travel.

### **Time-Dependent, Shortest-Path Algorithm for Real-Time Intelligent Vehicle Highway System Applications**

The algorithm created by Ziliaskopoulos and Mahmassani (1993) calculated time-dependent shortest paths from all nodes in a network to a given destination node with time-dependent arc costs. This approach can handle networks where the travel cost is not the travel time itself. Based on Bellman's principle of optimality, the algorithms discretizes the horizon of interest into small time intervals. Starting from the destination node, it calculates the paths operating backwards.

The algorithm was used in the program to create a path that is ideally the fastest route to the destination, given the blocked paths. This algorithm does not take into account traffic density in a route, but was used as a sort of "best case scenario" for routes.

### **An Exploratory Study on Uber, GrabCar, and Conventional Taxis in Metro Manila**

A study done by Paronda, Regidor, and Gaabucayan-Napalang, (2017) says that Uber and GrabCar are popular modes of transportation developed abroad and introduced to Filipino Commuters. The service is classified by the Department of Transportation and Communications (DOTC) as Transportation Network Company (TNC). The study was conducted with an online survey using social media in which correspondents were asked to summarize their total experience using existing Taxi Companies compared to Uber and GrabCar.

This study aided the research as a basis to see whether or not the other conventional modes of transportation are effective. As the study was conducted in Manila, all data gleaned merely serves as a basis to the study to be done by the

# Sources:

- **Thesis Projects**

A Guide for Students in Computer Science and Information Systems

Authors: Mikael Berndtsson, Jörgen Hansson, Björn Olsson, Björn Lundell

ISBN: 978-1-84800-008-7 (Print) 978-1-84800-009-4

- **PSITE Undergraduate Research and Capstone Project Manual**

Authors: Cherry Lyn Sta. Romana, Randy Gamboa, Dave Marcial, Gregg Victor Gabbison, Allan Sioson

ISBN: 978-971-95389-0-5

- **IJCCE journal of Computer Science How to do Research Step by Step Guide**
- **Presentation of Jaderick from UPLB**

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- **ISBN: Book**

Gray, D. (2009). Doing Research in the Real World 2nd edition. British Library

- **Online**

Presentation of Danilo B. Largo, Ph. D.

Presentation of Shamanthakamani Narendan, Ph. D.

Presentation of Bobby Gerardo, Ph.D.

University of Michigan Proposal Writer's Guide by Don Thackrey

Department of Computer Science, Ryerson University

Jason Eisner of University of Pennsylvania

# Thank you for listening 😊