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LITERATURE REVIEW CHAPTER

BEST PRACTICES IN CRAFTING LITERATURE REVIEW CHAPTER

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DR NOUREEN TALPUR

Lecturer at Universiti Teknologi PETRONAS (UTP)



➤ EDUCATION



PhD IT, Universiti Teknologi PETRONAS, Malaysia



MSc. IT, Universiti Tun Hussein Onn Malaysia, Malaysia



B.CS, Muhammad Ali Jinnah University, Pakistan

➤ EXPERIENCE

- Graduate Assitant - 5 years
- Teaching Experience - 4 years



➤ RESEARCH / EXPERTISE

- Artificial Intelligence and Machine Learning for Smart Communities
- Data Science (Big Data Analytics, Data quality assessment, data mining)
- Optimization, prediction, classification, and feature selection

➤ CONSULTANCY AND TRAINING

- Master the Basics of Big Data, AI, and Machine Learning for Tomorrow's Workforce (a fully funded program by KPT)
- Data Understanding & Data Quality Assessment (PETRONAS GTS - OPTIMUS)

➤ PROFESSIONAL BODY / MEMBERSHIP

Graduate Technologist, MBOT



➤ TEACHING EXPERIENCE

- Artificial Intelligence (using MATLAB)
- Structured Algorithm & Programming (using Python)
- Object Oriented Programming (using Python)
- System Architecture
- Big Data Analytics (using Hadoop & Map-reduce framework)
- Discrete Mathematics
- Statistics and Empirical Methods

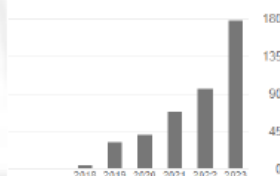


➤ ACHIEVEMENTS

Google Scholar

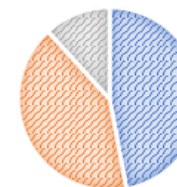
Cited by

	All	Since 2018
Citations	425	423
h-index	8	8
i10-index	7	7



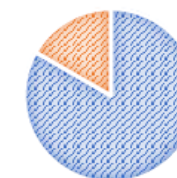
PUBLICATIONS (17)

- Journal Publications
- Conference Proceedings
- Book Chapters



JOURNAL PUBLICATIONS

■ Q1 ■ Q2



Research Grants Utilized = 5





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OUTLINE

- 1. Purpose of a Literature Review**
- 2. Steps to search studies for Literature Review Chapter**
 - i. Search relevant literature aligned with your topic
 - ii. Analyze & evaluate the importance of paper
 - iii. Create an excel and list the important studies
- 3. Writing Literature Review**
 - i. Make an outline of the Chapter 2
 - ii. Ensure appropriate citation of literature
 - iii. Summarize literature studies in the form of table
 - iv. Addressing research gaps identified from existing literature
 - v. Conclusion remarks



1. Purpose of a Literature Review

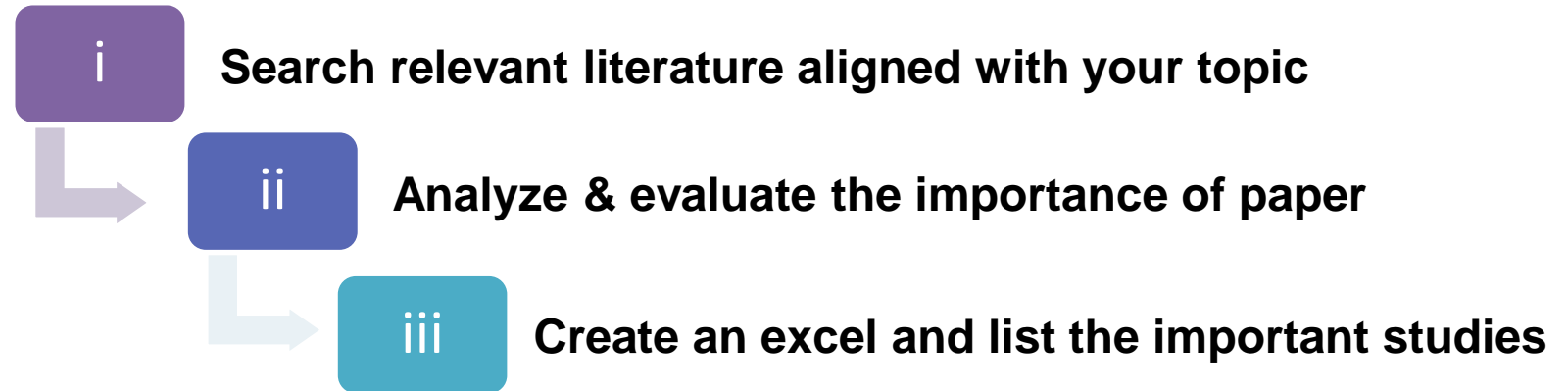
- ✓ **Literature review section of your thesis** is where **you investigate past work relevant to your research topic.**
- ✓ Define **key concepts** and **ideas**
- ✓ Following Chapter 1, your literature review embarks on **answering your primary research question: Who** has explored **what** aspects, **why**, and **what** discoveries have they made?
- ✓ It **enables you to grasp the existing work done of your topic**, validate your **hypotheses**, **fine-tune** your research questions, and **pinpoint any existing gaps.**
- ✓ It also **serves as an evidence of your familiarity** with relevant research **within your field.**





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2. Steps to search studies for Literature Review Chapter





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2. Steps to search studies for Literature Review Chapter

i - Search relevant literature aligned with your topic



<https://scholar.google.com/>

*Find most relevant studies
from **past 5 years***

Google Scholar search results for "feature selection for high dimensional".

Articles About 17,900 results (0.09 sec)

Any time
Since 2024
Since 2023
Since 2020
Custom range...
2019 — 2023
Search

Sort by relevance
Sort by date

Any type
Review articles
☐ include patents
☒ include citations

[HTML] Benchmark for filter methods for **feature selection** in **high-dimensional** classification data [HTML] sciencedirect.com
A Bommert, X Sun, B Bischl, J Rahnenführer... - ... Statistics & Data Analysis, 2020 - Elsevier
... **feature selection** techniques on **high-dimensional** data sets. We compare 22 filter methods from different toolboxes on 16 **high-dimensional** ... which methods **select** the **features** of a data ...
☆ Save Cite Cited by 562 Related articles All 11 versions Web of Science: 294

Variable-size cooperative coevolutionary particle swarm optimization for **feature selection** on **high-dimensional** data [PDF] ieee.org
XF Song, Y Zhang, YN Guo, XY Sun... - IEEE Transactions on ..., 2020 - ieeeexplore.ieee.org
... PROPOSED **FEATURE SELECTION** ALGORITHM Focusing on the challenge of the curse of **dimensionality** caused by **high-dimensional features**, we present a new FS method based ...
☆ Save Cite Cited by 264 Related articles All 2 versions Web of Science: 210

A comprehensive review of **dimensionality** reduction techniques for **feature selection** and **feature** extraction [PDF] jastt.org
R Zebari, A Abdulazeez, D Zeebaree, D Zebari... - Journal of Applied ..., 2020 - jastt.org
... This work reviewed more than forty articles of **feature selection** and **feature** extraction that ...
Various issues can benefit from the **feature selection** techniques application. **High dimension**, ...
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2. Steps to search studies for Literature Review Chapter

ii - Analyze & evaluate the importance of paper



Benchmark for filter methods for feature selection in high-dimensional classification data ☆

Andrea Bommert^a, Xudong Sun^b, Bernd Bischl^b, Jörg Rahnenführer^a, Michel Lang^a

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<https://doi.org/10.1016/j.csda.2019.106839>

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Abstract

Feature selection is one of the most drawn increasing attention due to fields like bioinformatics. For feature selection, since they can be combined with different filter methods work, to run time of machine learning algorithms and predictive accuracy, and dimensional classification data sets, time and accuracy when combining there is no group of filter methods

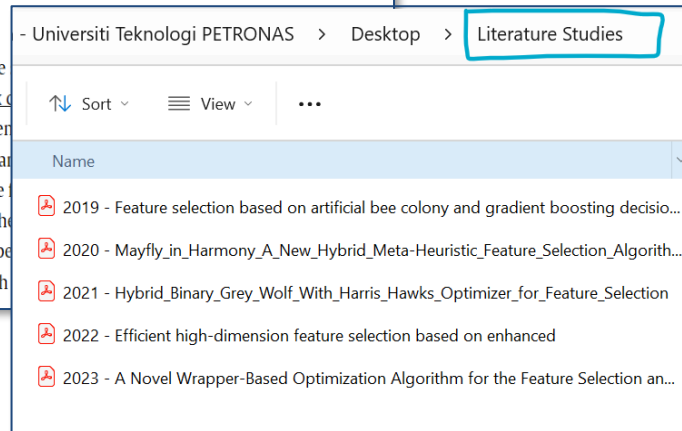
4. Summary and conclusions

Feature selection is a key part of data analysis, machine learning and data mining. There are many methods for feature selection, but it is unclear which of these methods perform best. In this analysis we focused on the comparison of filter methods for feature selection. We analyzed 22 filter methods based on 16 high-dimensional classification data sets from various domains.

To find out which of the filter methods are they rank the features, we computed rank of sets, especially the data sets containing general features, there were three groups of similar features were not similar to any other method. The came from the same toolboxes. For the other similar. Also, we investigated the scaling behavior of groups of filters that behave similarly with

1 - Read **Abstract** and **Conclusion** of the study to evaluate if the study closely match with your area of the study

2 - **Download the paper** if its relevant to read details later



3 - **Create a folder** and **save** all those studies **organized by year of study**



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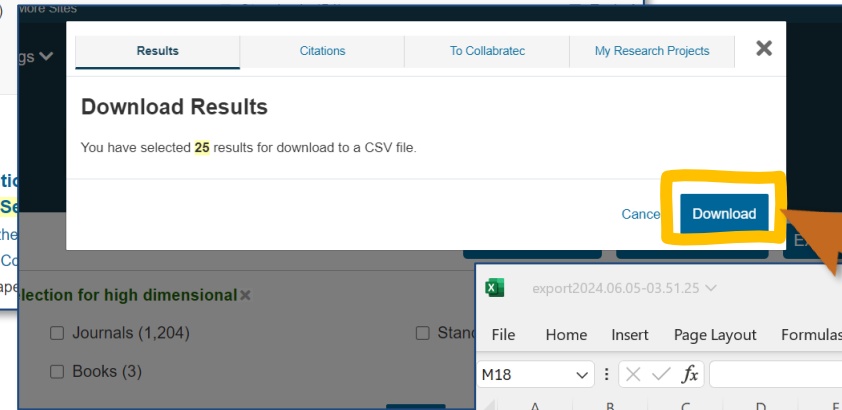
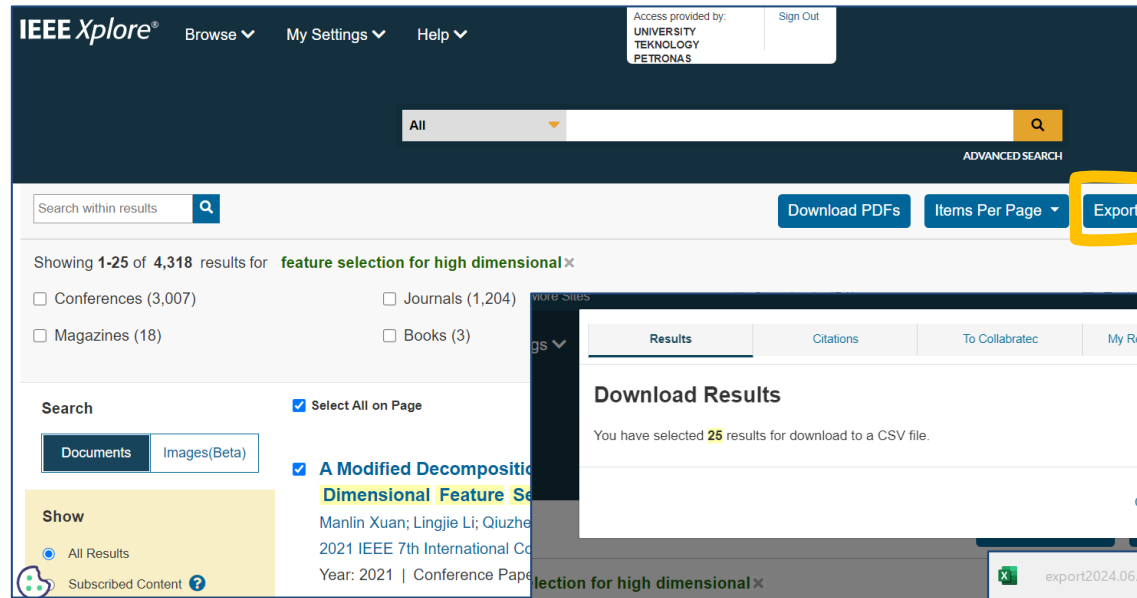
1. Steps to search studies for Literature Review Chapter

iii - Create an excel and list of the important studies



IEEE
Xplore®
Digital Library

<https://ieeexplore.ieee.org/Xplore/home.jsp>



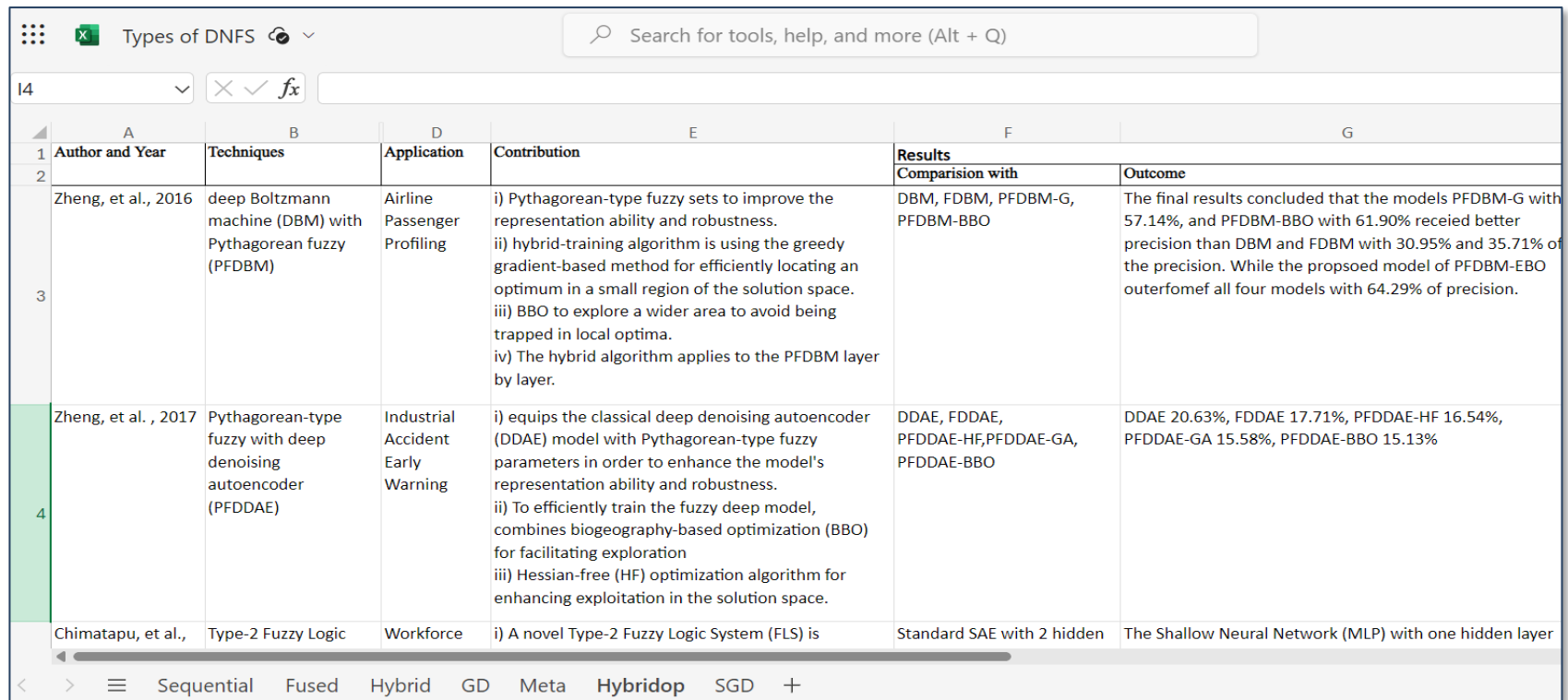
	A	B	C	D	E	F	G	H	I	J	K	L
1	Document	Authors	Author Affi	Publication	Date Added	Publication	Start Page	End Page	Abstract	ISSN		
2	A Modified	M. Xuan; L. Colloge	of 2021 IEEE	14-Apr-22	2021	109	113	Feature selection (f				
3	A Hybrid Sr	U. Ali; K. S. College	of 2019 Interi	21-Jun-19	2019	71	75	Now a days, in educ				
4	Feature Se	G. Manikar Anna Univ	2017 Seco	5-Oct-17	2017	320	325	In recent years, feat				
5	Flexible-F	G. Manikar Departme	2018 Tentl	#####	2018	237	243	Due to advancement				
6	An effectiv	S. L. Happy Departme	2017 25th	#####	2017	1574	1578	Feature se 2076-14				
7	Extremely	S. Li; D. W. College	of IEEE Trans	#####	2014	737	747	To select ii2168-22				
8	A hybrid fe	A. Rouhi; F. Departme	2017 2nd C	8-Jun-17	2017	16	20	Nowadays, with the				
9	Parallel Lo	Z. Manbari Departme	2021 11th	#####	2021	500	507	Recent tec 2643-27				
10	Preordona	H. Chamla Departme	2021 Fifth	1-Dec-21	2021	1	5	Feature selection is				
11	Research (M. Zhu; B. Zhejiang	U 2017 Interi	#####	2017	273	277	The purpose of this				

1. Search by topic
2. Choose by Conference, journal, book, magazine ...
3. Select the studies matching to your title/research area
4. Export the list in CSV

2. Steps to search studies for Literature Review Chapter

iii - Create an excel and list of the important studies

Create your own Excel file of the studies that are most relevant, and you want to add into your thesis



	A	B	D	E	F	G
1	Author and Year	Techniques	Application	Contribution	Results	
2					Comparison with	Outcome
3	Zheng, et al., 2016	deep Boltzmann machine (DBM) with Pythagorean fuzzy (PFDBM)	Airline Passenger Profiling	i) Pythagorean-type fuzzy sets to improve the representation ability and robustness. ii) hybrid-training algorithm is using the greedy gradient-based method for efficiently locating an optimum in a small region of the solution space. iii) BBO to explore a wider area to avoid being trapped in local optima. iv) The hybrid algorithm applies to the PFDBM layer by layer.	DBM, FDBM, PFDBM-G, PFDBM-BBO	The final results concluded that the models PFDBM-G with 57.14%, and PFDBM-BBO with 61.90% received better precision than DBM and FDBM with 30.95% and 35.71% of the precision. While the proposed model of PFDBM-EBO outperforms all four models with 64.29% of precision.
4	Zheng, et al., 2017	Pythagorean-type fuzzy with deep denoising autoencoder (PFDDAE)	Industrial Accident Early Warning	i) equips the classical deep denoising autoencoder (DDAE) model with Pythagorean-type fuzzy parameters in order to enhance the model's representation ability and robustness. ii) To efficiently train the fuzzy deep model, combines biogeography-based optimization (BBO) for facilitating exploration iii) Hessian-free (HF) optimization algorithm for enhancing exploitation in the solution space.	DDAE, FDDAE, PFDDAE-HF, PFDDAE-GA, PFDDAE-BBO	DDAE 20.63%, FDDAE 17.71%, PFDDAE-HF 16.54%, PFDDAE-GA 15.58%, PFDDAE-BBO 15.13%
	Chimatapu, et al.,	Type-2 Fuzzy Logic	Workforce	i) A novel Type-2 Fuzzy Logic System (FLS) is	Standard SAE with 2 hidden	The Shallow Neural Network (MLP) with one hidden layer



3. Writing Literature Review

i - Make an outline of the Chapter 2

Introduction

- Overview ***Purpose and Importance*** of the Literature Review - Explanation of the ***Structure and Organization*** of the Chapter

Theoretical Framework

- ***Introduction*** to ***Theoretical Frameworks*** relevant to the research topic
- Explanation of ***key concepts*** and constructs

Related Works

- ***Exploration of historical background*** of Topic - Review of ***recent studies*** and developments in the field - ***Comparison of different approaches and methodologies***

Research Gap

- Identify ***research gaps/unanswered questions*** in literature - Discuss ***challenges/limitations*** in past studies – ***Justify why addressing those gaps are important***

Chapter Summary

- ***Recap of key findings/insights*** from the literature review - Summary of ***significance of the literature review*** to the overall study



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3. Writing Literature Review






ii - Ensure appropriate citation of literature

- ✓ **Always cite works of other authors** whose ideas, research findings, theories, or arguments or **even Figures** you have included or discussed in your literature review. **Citing your resources** is required for all kinds of writing projects.
- ✓ It is **important to cite, not only direct quotes**, but **paraphrased sentences** as well. A paraphrased sentence is when you take a passage from a source and rewrite it in your own words.

Example of quote: Evolution is a gradual process that “can act only by very short and slow steps” (Darwin, 1859).

- ✓ **Maintain only one citation style** (APA, MLA, Chicago, IEEE) throughout your literature review.

<https://www.sjsu.edu/writingcenter/>

Popular Citation Styles	
And Who Uses Them!	
	MLA English Literature Foreign Language Communications Religious Studies
	APA Psychology Education Business/Economics Nursing Linguistic Studies
	Chicago History Art History Fine Arts Anthropology Philosophy
	IEEE Engineering Computer Science Information Science
	CSE Biology Physics Chemistry Geology

Always check with your instructor about what style to use!





3. Writing Literature Review

ii - Ensure appropriate citation of literature

Helpful Phrases for Writing Literature Review

1. Previous literature

The literature review shows that __
Previous research showed __
Seminal contributions have been made by __
A series of recent studies has indicated that __
Several theories have been proposed to __, some focusing on __, others on __
There has been numerous studies to investigate __
This has been used in several studies to assess __
Previous studies have shown __
Several studies suggest that __
This has also been explored in prior studies by __
Prior research suggests that __
Previous studies have emphasized __
The majority of prior research has applied __
Most early studies as well as current work focus on __
For instance, the following studies were conducted on __
Studies of __ are well documented, it is also well acknowledged that __
A number of authors have recognized __

2. Limitations of previous research

A number of questions regarding __ remain to be addressed.
A closer look to the literature on __, however, reveals a number of gaps and shortcomings.
This question has previously never been addressed because __
Most studies have relied on __
Previous studies by __ cannot be considered as conclusive because __
Previous studies have almost exclusively focused on __
This has been previously assessed only to a very limited extent because __
In the present studies __ were constrained to __
In previous studies were limited to __
Although results appear consistent with prior research, they appear inconsistent with __
These are previously unstudied because __
As far as we know, no previous research has investigated __
Moreover, although research has illuminated __ no study to date has examined __
Despite decades of research, this continues to be debated among __
This section points out some of the problems encountered in the extant research.
Although there are many studies, the research in __ remains limited.



3. Writing Literature Review

ii - Ensure appropriate citation of literature

Helpful Phrases for Writing Literature Review

3. Research questions

More specific research questions will be introduced and investigated in __

A further question is whether __

Finally, another promising line of research would be __

The study addresses several further questions on __

Some of the interesting questions in this context are __

In order to address the questions outlined above, we report here __

These questions are of central interest as much recent research in __

Furthermore, __ is arguably an important question to be addressed.

The question now is how __ can be used to explain __

Study addresses the research question __

In order to properly address this question, we __

An important question associated with __ is __

A critical open question is whether __

A still unsolved question is whether __

This remains an open question as __

This question has previously never been addressed because __

This study offers a test of __ research question

Study addresses the research question __

4. Research to be explored

A more systematic and theoretical analysis is required for __

As the authors note earlier, more work is necessary to __

Additional studies to understand more completely the key tenets of __ are required.

The unexpected findings signal the need for additional studies to understand more about __

This paper addresses __, so far lacking in the scientific literature.

A new approach is therefore needed for __

One of the tough challenges for all researchers in this domain is __



1. Writing Literature Review

iii - Summarize literature studies in the form of table

Table 2: Summary of the recent literature for the task of FS in medical sciences

Study, year	Algorithm	Application	Major contributions	Outcomes
[61], 2019	Crow-Search Algorithm (CSO)	Lung cancer detection	<ul style="list-style-type: none">• Lungs modality is determined using computed tomography (CT) imaging, and classification is done using Probabilistic Neural Networks (PNN).• Feature extraction is done using the gray-level co-occurrence matrix.• CSO is used for the task of FS	The findings show that the CSO-based FS technique successfully delivered 90% accuracy.
[62], 2020	Two-stage Genetic Algorithm-feature Transformation (2-Tra-GA)	Hepatitis prediction	<ul style="list-style-type: none">• A 2-Tra-GA-based feature transformation is proposed with two phases of FS and augmentation• The lagrangian SVM (LSVM) approach is used to predict the hepatitis	The novel 2-Tra-GA-LSVM technique showed faster convergence with 90.32% accuracy in distinguishing between survived and deceased patients with hepatitis.
[63], 2021	Krill Herd Algorithm (KHA)	Brain epilepsy seizure detection	<ul style="list-style-type: none">• The EEG data is used to identify epileptic seizures using a deep learning approach.• KHA identifies the most optimal features from the brain signal data.• General Adversarial Networks classify the selected features.	The KNN classifier detects the seizure with 99.25% when compared to the baseline method owing to the efficient FS mechanisms of the KHA algorithm.
[64], 2021	Grasshopper Optimization Algorithm (GOA)	Diabetes disease diagnosis	<ul style="list-style-type: none">• GOA is used to select the key features from diabetes type II data.• Three classifiers including SVM, NB, and Tree are used to classify the features of the diabetes data.	Compared to the NB and Tree classifier, SVM-GOA showed the best results having the least mean squared error of 3.0351.

3. Writing Literature Review

iii - Addressing research gaps identified from existing literature



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- ✓ Recognizing areas of research having ***insufficient/limited knowledge, understanding, or investigation***.
- ✓ These gaps can be identified by ***unanswered questions*** or ***areas where further exploration is needed*** such as Future works.
- ✓ Addressing these gaps involves ***proposing potential research questions, methodologies, or approaches*** that can contribute to filling these voids in knowledge.



3. Writing Literature Review

iii - Conclusion remarks



- ✓ In the conclusion of Chapter 2, the researcher should **recap the significant findings and insights** collected from the literature review.
- ✓ Highlight the importance of the literature review to the overall study, explaining its role in ***shaping the research framework, guiding methodology***, and ***addressing gaps*** in the existing body of knowledge.



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Thank You!

