武漢理工大學
Wuhan University of Technology

English for Science and Technology

Abstract Writing

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01

PART ONE

Writing Requirements

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Conciseness

The abstract should be brief and to the point, typically between **150-250** words.

Objectivity

The language of the abstract should be **neutral**, avoiding personal opinions or subjective evaluations.

Independence

The abstract should be self-contained, allowing readers to understand the **main content** of the paper without needing to read the entire text.

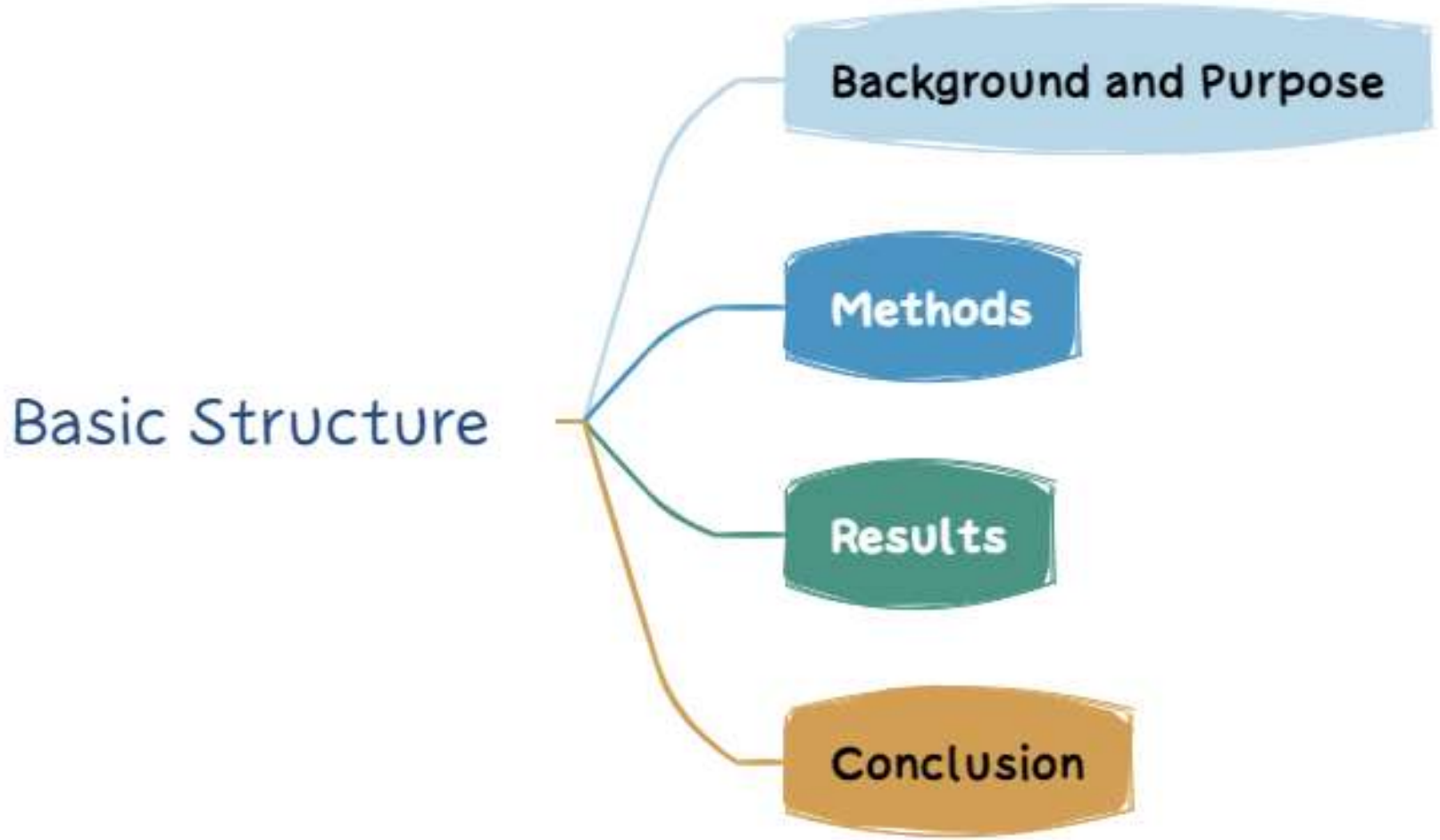
Keywords

Include **5 - 7** keywords to aid in literature search.

02

PART TWO

Basic Structure


Basic Structure
Background and Purpose
Methods
Results
Conclusion

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Background and Purpose

Briefly introduce the **background of the research** and clearly state the **research objective or problem**.

Methods

Provide a **summary of the methods** or **experimental design** used.

Results

Highlight the **main findings** or **outcomes** of the research.

Conclusion

Briefly state the **conclusions** and **potential impact** of the research.

03

PART THREE

Writing Skills

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Precise and Concise Language

Avoid lengthy sentences, and directly convey the core content of the study.

Avoid Abbreviations

Unless the abbreviation is widely recognized (e.g., DNA, AI), avoid using abbreviations.

Use of Tense

Typically, the background section uses past or present perfect tense, methods use past tense, results use past tense, and conclusions use present tense.

No Citations or Data

Abstracts generally do not include citations or detailed data, unless it is crucial to the research.

04

PART FOUR

Example analysis

Abstract:

In recent years, deep learning has been applied in a wide variety of domains and gains outstanding success. In order to achieve high accuracy, a large amount of training data and high-performance hardware are necessary for deep learning. In real-world applications, many deep learning developers usually rent cloud GPU servers to train or deploy their models. Since training data may contain sensitive information, training models on cloud servers will cause severe privacy leakage problem. **To solve this problem, we propose a privacy-preserving deep learning model based on matrix transformation. Specifically, we transform original data by adding or multiplying a random matrix. The obtained data is significantly different from the origin and it is hard to recover original data, so it can protect the privacy in original data. Experimental results demonstrate that the models trained with processed data can achieve high accuracy.**

Index Terms—Deep Learning, Privacy Protection, Data Security, Matrix Transformation

Ref: D. Zhao, Y. Chen, J. Xiang and H. Li, "DLMT: Outsourcing Deep Learning with Privacy Protection Based on Matrix Transformation," *2023 26th International Conference on Computer Supported Cooperative Work in Design (CSCWD)*, Rio de Janeiro, Brazil, 2023, pp. 1384-1389

Abstract:

Deep learning is one of the advanced approaches of machine learning, and has attracted a growing attention in the recent years. It is used nowadays in different domains and applications such as pattern recognition, medical prediction, and speech recognition. Differently from traditional learning algorithms, deep learning can overcome the dependency on hand-designed features. **Deep learning experience is particularly improved by leveraging powerful infrastructures such as clouds and adopting collaborative learning for model training. However, this comes at the expense of privacy, especially when sensitive data are processed during the training and the prediction phases, as well as when training model is shared. In this paper, we provide a review of the existing privacy-preserving deep learning techniques, and propose a novel multilevel taxonomy, which categorizes the current state-of-the-art privacy-preserving deep learning techniques on the basis of privacy-preserving tasks at the top level, and key technological concepts at the base level. This survey further summarizes evaluation results of the reviewed solutions with respect to defined performance metrics. In addition, it derives a set of learned lessons from each privacy-preserving task. Finally, it highlights open research challenges and provides some recommendations as future research directions.**

Keywords: Deep Learning, Deep Neural Network, Privacy, Privacy preserving, Sensitive data, Taxonomy

Ref: A. Boulemtafes, A. Derhab, and Y. Challal, "A review of privacy-preserving techniques for deep learning," *Neurocomputing*, vol. 384, pp. 21–45, Apr. 2020

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Thanks

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