University of Tunis El Manar

National Engineering School of Tunis

Information and Communication Technologies Department

End-of-Year Project I (or II) Report

Project Title

Authors:

student1_Firstname student1_LASTNAME
student2_Firstname student2_LASTNAME

Class:

1rst (or 2nd) Year INFO/TEL

Supervised by:

Mrs./Mr. Firstname Lastname

Academic Year: 202x-202x

University of Tunis El Manar

National Engineering School of Tunis

Information and Communication Technologies Department

Capstone Final Report

Submitted by:

Firstname LASTNAME

In partial fulfillment of the requirements for the:

National Engineering Diploma in Computer Science

Project Title

Host Company:
Company Name

Defense Date: **date**

Jury Members:

President:	**Mrs./Mr. Firstname LASTNAME**
Co-President:	**Mrs./Mr. Firstname LASTNAME**
Reviewer:	**Mrs./Mr. Firstname LASTNAME**
Company Supervisor:	**Mrs./Mr. Firstname LASTNAME**
ENIT Supervisor:	**Mrs./Mr. Firstname LASTNAME**

Academic Year: 202x-202x

Signatures

Host Company Supervisor: Mrs./Mr.FisrtName LastName

ENIT Supervisor: Mrs./Mr.FisrtName LastName

Dedication

We would like to dedicate our project to ...

Acknowledgments

We would like to express our special regards...

We would like to also thank ...

Abstract

Write your English abstract here
Keywords : Natural language processing, Artificial intelligence, Keyword, Keyword

Résumé

Résumé en français ...
Mots clés : Traitement Automatique du Langage Naturel, Intelligence Artificielle, Mot clé, Mot clé

Contents

List of Figures

List of Tables

List of Acronyms

- **BERT:** Bidirectional Encoder Representations from Transformers.
- **DA:** Dialectal Arabic.
- **LSTM:** Long Short-Term Memory.
- **MLM:** Masked Language Modeling.
- **MLP:** Multi-Layer Perceptron.
- **MSA:** Modern Standard Arabic.
- **NLP:** Natural Language Processing.
- **NSP:** Next Sentence Prediction.
- **ReGex:** Regular Expression.
- **RNN:** Recurrent Neural Network.
- **RTE:** Recognizing Textual Entailment.
- **SWAG:** Situations With Adversarial Generations.
- **TPU:** Tensor Processing Unit.

General introduction

A general introduction typically includes several key elements: Background and Context, Problem Statement, Objectives and Goals, Methodology, Scope and Deliverables, and Structure of the Report.

Background and Context: Provide an overview of the project's background and context. Explain why the project is important and relevant in its field or industry. Discuss any previous work or research that has led to the current project.

Problem Statement: Clearly define the problem or issue that the project aims to address. Describe the scope and limitations of the project, and explain why it is worth investigating or solving.

Objectives and Goals: Outline the specific objectives and goals of the project. These should be clear, measurable, and achievable outcomes that the project aims to accomplish. Discuss how achieving these objectives will contribute to addressing the problem statement.

Methodology: Describe the approach or methodology used to conduct the project. Explain the research methods, techniques, or tools employed to gather data, analyze information, and develop solutions. Provide justification for the chosen methodology and discuss any alternatives considered.

Scope and Deliverables: Define the scope of the project and the deliverables expected upon completion. Outline what will be included in the report and any additional materials or outputs produced as part of the project.

Structure of the Report: Provide an overview of the structure and organization of the report. Briefly describe each section or chapter and how they contribute to the overall narrative of the project.

Chapter 1

Project Overview

Introduction

A chapter introduction sets the stage for the content to follow and helps guide readers through your project.

Begin by providing some **context or background** information relevant to the chapter's topic. Then state the **objective** of the chapter. What specific aspect of the topic will this chapter address? What questions will it seek to answer or what hypotheses will it explore?

Outline the scope of the chapter and the structure of its contents. What specific subtopics or themes will be covered, and in what order? This provides readers with a roadmap of what to expect.

If applicable, briefly recap how this chapter builds upon the findings or discussions presented in previous chapters.

If applicable, provide a preview of the main outcomes, findings, or conclusions that will be discussed in the chapter. This primes readers for what they can expect to learn or discover as they progress through the chapter.

Finally, conclude the introduction by smoothly transitioning into the subsequent sections of the chapter.

1.1 Context

Begin by defining the context of your project. What is the overarching topic or subject matter? Provide a brief overview to orient readers to the general area of focus.

If relevant, provide historical background information that sheds light on how the topic has evolved over time. Discuss key events, developments, or trends that have influenced the current state of affairs.

Consider socioeconomic factors that may influence the context, such as cultural norms, economic conditions, or technological advancements. Discuss how these factors shape the environment in which your topic operates.

Identify any current issues, challenges, or controversies relevant to the context. Discuss why these issues are significant and how they impact the topic you're exploring.

Finally, offer a smooth transition to the next session.

1.2 Key Instructions on manuscript preparation

Authors must adhere to certain rules of usage to ensure clarity, professionalism, and effectiveness in their writing. One fundamental rule is to maintain consistency in language, style, and formatting throughout the report. This includes:

1. The number of pages of the report, excluding annexes, must not exceed:
   (a) 30 pages for an End-of-Year Project I (PFA1),
   (b) 50 pages for an End-of-Year Project II PFA2,
   (c) and 70 pages for a Capstone Project (PFE).
2. Have a clear structure and balance between chapters. Approximately 12 pages per chapter (more or less 2 pages).
3. Verify the accuracy of factual information and references cited in the text. Use bibliographic references in the text through the `\cite{citation-key}` command. The citation-key is declared in the bibliography database file **references.bib**.
   Check the source code of the following paragraph:
   Vaswani et al. published their seminal paper, Attention Is All You Need, in December 2017. We will look at the Transformer model they designed from the outside in this section [2].
   Check the file **references.bib** for more examples. For a reference with an url, we have to add the access date. Check the references to see this example [**?**].
4. Define Acronyms: When introducing an acronym for the first time in your report, spell out the full term followed by the acronym in parentheses. For example, "Artificial Intelligence (AI)".
   Please ensure that the acronym list is maintained in alphabetical order.
   Check the file **Acronyms.tex** for more examples.
5. Use the active voice instead of the passive voice often results in clearer, more direct writing. For example:

- **Passive**: The experiment *was conducted* by the researchers.
- **Active**: *We conducted* the experiment.

1.2.1 Figures

Each figure requires accompanying text that describes its content. If the figure is not your own creation and belongs to another author, you must include the source reference.

Please follow these rules:

- Assign a different label for each figure through the command `\label{fig:Transformer}`.
- A text describing a figure makes reference to that figure through the command `\ref{fig:Transformer}`.

Here is an example that illustrates the rules for using figures.

The original Transformer model contains a stack of 6 layers as it is shown in Figure 1.1.
This architecture will be discussed further in Chapter 2.

1.2.2 Tables

Similar to Figures,each Table requires accompanying text that describes its content.
Here is an example that illustrates how to create an use Tables.
The results of this experiment, for different numbers of epochs and nodes is displayed in Table 1.1.

Epoch	1	2	4	6	8	10
Training time (1 worker)	11.31	22.7	45.53	68.2	90.65	113.16
Training time (8 workers)	6.9	13.8	27.58	45.81	68.15	90.48
Speedup	1.64	1.64	1.65	1.49	1.33	1.25

Table 1.1: The training time (in minutes) on 1 and 8 workers with the corresponding speedup

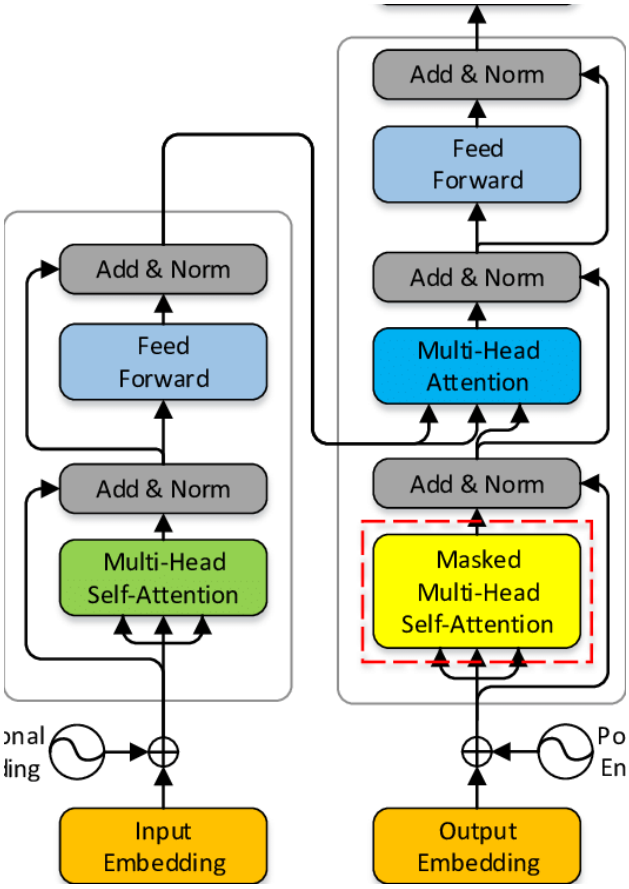

Figure 1.1: The Transformer architecture [1].

Conclusion

In conclusion, this chapter has provided a foundational overview of the project, outlining its objectives and scope. By establishing this context, the subsequent chapters will delve into the specific methodologies, findings, and analysis that contribute to achieving the project's goals.

Chapter 2

Preliminary Analysis

Introduction

In this chapter, we present linguistic study about the Tunisian dialect and the Modern Standard Arabic. We then present the different solutions and work done .....

2.1 Section

A brief introduction to the following subsections (**at least two sentences**).

2.1.1 Subsection title

Our first step was to choose ....

2.1.2 Subsection title

After choosing the ....

2.2 Section

A brief introduction to the following subsections (**at least two sentences**).

2.2.1 Subsection title

Our first step was to choose ....

2.2.2 Subsection title

After choosing the ....

Conclusion

In conclusion, this preliminary analysis has provided an initial understanding of ... . The insights gained from this stage, such as ... ..., will inform the more detailed investigation and methodology development in the subsequent chapters.

Chapter 3

Data Construction & Environment Setup

Introduction

Once we have finished the project presentation and description. We will continue in this chapter with the phase that allows us to deliver the solution that ....

3.1 Section

A brief introduction to the following subsections (**at least two sentences**).

3.1.1 Subsection title

Our first step was to choose ....

3.1.2 Subsection title

After choosing the ....

3.2 Section

A brief introduction to the following subsections (**at least two sentences**).

3.2.1 Subsection title

Our first step was to choose ....

3.2.2 Subsection title

After choosing the ....

Conclusion

In this chapter, We have gone over the environment we are working with as well as the results of .....

Chapter 4

Implementations & Achievements

Introduction

In this chapter, we will compare the XX dataset results with a different dataset, namely, YY which contains Tunisian and DD Dialects only.
Then, we will compare ...

4.1 XX Dataset

A brief introduction to the following subsections (**at least two sentences**).

4.1.1 Data exploration

4.1.2 Data cleaning

4.2 Experimental Results

A brief introduction to the following subsections (**at least two sentences**).

4.2.1 Results of XX Dataset

4.2.2 Results of YY Dataset

4.2.3 Comparison between XX and YY datasets

Discussion

As a conclusion of the datasets comparison, ...

4.3 Findings & Perspectives

Conclusion

In this chapter, we introduced the collected XX dataset as well as the other datasets used for the comparison. We exposed their results and we compared them to the results presented in the third chapter of the dataset provided in the CC competition.

General Conclusion

Writing a general conclusion involves summarizing the main points of your work, reflecting on its significance, and offering any final thoughts or recommendations. Here's a structured approach to writing a general conclusion:

1. Begin by summarizing the key findings or results of your work. Highlight the most important discoveries, insights, or conclusions that you have reached throughout your project or study.

2. Remind readers of the objectives or goals you set out to achieve at the beginning of your work. Discuss how well you have met these objectives and whether you have successfully addressed the problems you identified.

3. Acknowledge any limitations or constraints of your study. Discuss any challenges you encountered, such as methodological limitations, data constraints, or unexpected obstacles, and how these may have affected your results or conclusions.

4. Identify areas for future research or further investigation based on the findings of your work. Suggest potential approaches that could improve your work and open further perspectives.

Bibliography

[1] D. Rothman, *Transformers for Natural Language Processing*. Packt Publishing, 2021.

[2] A. Vaswani, N. Shazeer, N. Parmar, J. Uszkoreit, L. Jones, A. N. Gomez, L. Kaiser, and I. Polosukhin, "Attention is all you need," *In Advances in Neural Information Processing Systems*, p. 6000–6010, 2017.