

# COMP8420 2025 S1 Assignment 2 (Text Generation)

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Due: Tuesday April 18th 2025 (Mid-Semester Break)



This assignment assesses the following unit learning outcomes:

- ULO1: Compare and evaluate the key natural language processing applications that meet the current and emerging industry needs.
- ULO3: Implement natural language processing applications using common tools and libraries used in industry.
- ULO5: Apply natural language processing methods and techniques to industry applications using real data.

**It is expected that students will need approximately 30 to 40 hours to complete the project *individually*.**

**It accounts for 30% of the overall assessment for this unit.**

Start this assignment as soon as possible! Attend most of our lectures and workshops to find hints for the assignment. Make (even tiny) pieces of progress every week. If you leave this project until the last minute, you won't have enough time to complete it, even if you can program at 1000 lines per hour and you have a server with 100 GPUs.

## Essential Timeline:

- Release Date: Week 2 Lecture (Friday March 7th 2025)
- Due Date: **Mid-Semester Break (Tuesday April 22nd 2025)**

## 1 Introduction

Assignment 2 invites you to create a personal travel assistant that offers customized travel suggestions based on user information. Your company aims to build an application powered by large language models (LLMs) that generates personalized travel itineraries. Your responsibilities include:

1. Setting Up a Language Model: Configure and integrate a suitable language model for processing travel-related queries.
2. Automating Dialogue: Develop an automated dialogue system that interacts with users through the language model.
3. Developing a Frontend: Create a user-friendly interface to visualize and manage the travel planning process.
4. Demonstrating Application Effectiveness: Showcase your application's performance and impact in your final report.

## 2 LLM Setup

For this project, you are required to configure a large language model (LLM) as the backend. You have the option to either query LLM APIs or deploy a local LLM model. In your work, ensure that the connection is properly established and demonstrate the functionality of your LLM by testing it with a few sample prompts.

**Rubric [maximum 10 marks]:**

- Reusing a publicly available LLM APIs [4 marks]
- Deploying a local LLM model [3 marks]
- Showcasing LLM responses using a variety of prompts [3 marks]

Note: Deductions may apply if errors occur during the data collection process.

### 3 Assistant Dialogue System

The primary objective is to develop a digital assistant that

- helps users understand the travel planning task;
- collects essential data and delivers insightful recommendations.

To achieve this, you are required to develop a dialogue procedure that can:

- collects users' personal details, travel intentions, and specific requirements;
- process the gathered data to produce tailored travel recommendations based on your LLM;
- improve dialogue quality by comparing multiple models, experimenting with different prompts, and incorporating more external knowledge.

**Rubric [maximum 20 marks]:**

- Demonstrate a dialogue with the LLM [2 marks];
- Use a frontend [3 marks], where Python Notebook is worth 1 mark and an advanced visualization (website or mobile app) is worth 3 marks;
- Develop a feasible dialogue chain that collects key information: task definition [2 mark], personal information [2 marks], travel interest [2 marks], and additional prompts to enhance performance or user experience [2 mark];
- Present a well-structured plan as the final output [2 marks];
- Investigate different settings by comparing various prompts and LLMs [3 marks];
- Results and report [2 marks].

Note 1: Deductions may apply if errors occur during the data analysis process.

Note 2: Given its high impact on your overall score, allocate sufficient time and effort to this task.

Note 3: A report outlining your results and core code is required. If you are using a Python notebook, it can serve as both your implementation and report. However, if you are working on a more extensive project (e.g., a mobile app or a website), you may submit the entire project along with a separate report document.

### 4 Advancing Your Project

You have the opportunity to earn an additional 0.5 to 3 bonus points — and possibly even a complimentary cup of coffee from Qiongkai — by excelling in the following areas:

- Proposing an innovative solution with the potential to significantly influence the business paradigm.
- Showcasing the ability to support multiple languages and accommodate diverse user requirements.
- Tackling major user concerns such as privacy leakage or hallucination.

Note: The total assignment score is capped at 30 points.

## 5 Submission

You are required to submit a comprehensive project and report to iLearn for marking. The project should contain your solution (with code, data, etc.) and report. The report should be in a '.pdf' or '.ipynb' file and the code should be in either '.py' or '.ipynb' files. Please keep your project under 5 MB, and **only** use other resources over this size from public websites.

## 6 Notes

**Should I use PyTorch or TensorFlow?** Both frameworks are acceptable for our assignments. Please choose the one with which you are most comfortable at the moment. In alignment with our workshop settings, we highly encourage you to become familiar with PyTorch as soon as possible.

**Can I use other tools in my assignments?** In general, any publicly available Python package is permitted. However, you must clearly specify the tools and libraries you utilize in your assignment.

**Can I reuse previous projects or assignments from other units (e.g., COMP3420)?** It's allowed to reuse code pieces from other units, but please note that a simplistic approach won't solve the whole problem or earn you high marks. It's encouraged to develop a fresh project and solution.

**Can I use materials from workshops?** Absolutely. You are encouraged to apply, modify, and implement any tools introduced during our workshops. Keep in mind, though, that simply copying and pasting code will not result in a satisfactory solution—your understanding of the concepts and techniques is crucial and will significantly influence your score.

**What is the collaboration policy?** This assignment must be completed individually, and each student is required to submit their own work via iLearn. While discussing ideas with classmates is permitted, your final submission must be entirely your own work.

## 7 Policy

**Late Submission Policy:** For both assignments and the major project, NO late submission policy applies, unless Special Consideration has been submitted and approved. All deadlines mean 11:59:59 pm that day.

**Special Consideration Policy:** The Special Consideration Policy aims to support students who have been impacted by short-term circumstances or events that are serious, unavoidable and significantly disruptive, and which may affect their performance in assessment. If you experience circumstances or events that affect your ability to complete the assessments in this unit on time, please inform the convenor and submit a Special Consideration request through [ask.mq.edu.au](http://ask.mq.edu.au).