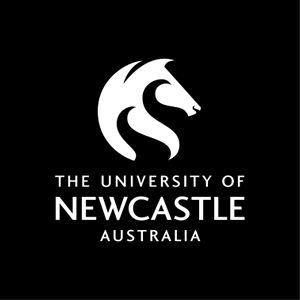
**The University of Newcastle**

**School of Information and Physical Sciences**



**Computing and Information Sciences**

**Work Integrated Learning**

**COMP3851A – Semester 1, 2025**

**Project Plan**

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**UON Peer Connect**

1. **Background**

UON Peer Connect is a project that is being undertaken by the University of Newcastle Australia. The idea of this project is identifying the challenges faced by tertiary students in their university journey. These challenges include difficulties such as time management, academic pressure, complexities of social adjustment, mental health issues, and difficulties in developing effective study skills.

The core motivation of this project is to develop an AI buddy that will be more accessible and designed to support students facing these challenges. The AI buddy will engage with students through the conversations, asking questions to pinpoint their exact concern and challenges. By understanding the root of their issues, the AI buddy will play an important role in either resolving their problems with existing materials on the university’s website or efficiently directing them to the most appropriate department or staff within the university for further assistance. This approach aims to ensure students receive timely and effective support, improving their overall university experience and mental health being.

Currently, the students are expected to navigate these challenges by seeking help from peers, faculty, and other available campus resources, which sometimes are difficult to navigate and may cause the students to avoid using them. However, this project seeks to improve the existing support by providing a accessible and effective AI-driven tool to encourage students to share their issues which in turn helps with identifying and resolving their problems.

1. **Aims**

The UON Peer Connect project's objectives is to pilot an inclusive, responsive student engagement AI assistant capable of acting as an initial contact for students who may be struggling during their university life. The primary objective is to mitigate student concerns, promote wellbeing, foster academic success and enhance access to support services via a compassionate conversational AI system.

The project goals include:

1. Recognizing and addressing persistent student concerns

Achieving systematic identification of the primary concerns of university students which include time management issues, academic related stress, homesickness, anxiety, feelings of isolation, and inadequate study skills, and developing AI response mechanisms for these issues. Offering a supportive resource that is available 24/7 helps to destigmatize the perception of seeking help.

1. Build and deploy a conversational AI engine

Virtual buddies capable of conversing with the students in a natural and meaningful manner are to be developed. This entails the creation of algorithms that interpret and analyze student’s verbal input for detection of emotional tone, sense of urgency and the context. The AI will employ machine learning and natural language processing (NLP) to determine key issues and offer appropriate responses or suggestions.

1. Guide students to the appropriate services or people

Enable the AI to refer students to appropriate existing university services such as counselling, academic support, student engagement, and peer mentoring. This will further personalise and enhance the timeliness of assistance. Help will be both timely and tailored.

1. Aid student wellbeing and encourage self-management

Intervention is triggered when a student’s concern is likely to escalate. The system allows for students to express their concerns, thus serving as a mechanism to promote self-reflection, emotional awareness, and self regulation.

1. Maintain participation and decrease attrition

Increased accessibility to support services, as targeted by the project, will improve user experience; consequently, academic engagement and attrition rates will be positively impacted. Hearing, supporting, and connecting with their students enables institutions to help students endure challenges and succeed in completing their studies.

1. Safeguarding equity, protecting inclusion, ensuring accessibility, and the ethical use of AI technology.

Equity and inclusion poses the most critical challenge of designing a system around students from different cultural, linguistic, and socio-economic backgrounds. The AI will operate within ethical constraints concerning data. Transparency, consent, protections, and privacy are put into place within its framework. Foster trust and discourage the eventual abandonment of the AI buddy.

1. Extract insights to better inform university initiatives.

Anonymized data insights generated from student interactions to define evolving problems and gaps in support systems. Staff and administration are assisted in refining provided services and tailoring offered units to better address emerging student needs.

1. Build students’ advance peer relations and foster feelings of being part of a community

Students are not alone and the AI buddy is constructed to solve problems alongside users. Emotional validation, encouragement, and guidance is to be provided and attributed towards reducing isolation and connectedness thus achieving campus-wide empathy-focused culture.

1. **Methods and Activities**

1. Understanding student needs and challenges

**Data collection & analysis:**

Conduct semi-structured interviews and surveys among a varied group of students. The goal is to gather in-depth insights into the complexities of student difficulties, identify unmet requirements, and understand the current support ecosystem, with an emphasis on student stress and social issues, among other challenges.

2. Designing and Developing the Conversational AI Engine

**Technology Selection & Setup**

Platform Evaluation: Based on factors like scalability, natural language understanding (NLU) capabilities, integration potential, and cost-effectiveness, choose a suitable conversational AI platform (such as Rasa, Dialogflow, or custom NLP framework).Infrastructure Provisioning: Establish the required cloud infrastructure (such as Google Cloud Platform, AWS) for hosting the AI models, knowledge base, and user interface, making sure that data is isolated and secure.

3. Improving User Experience and Engagement.  
 **Development of the user interface (UI)**Responsive Design: Create a web-based user interface for the AI chatbot that is fully responsive and available on several devices (desktop, tablet, and mobile), assuring maximum usability. Intuitive Interaction: Create a chat interface that is intuitive, visually clear, and simple to use, with features such as rapid response buttons for typical questions.

4. User Testing and Feedback Integration  
 Usability Testing: Run usability testing to uncover friction spots, comprehension challenges, and places for improvement in the AI's conversational flow and interface.  
 Establish a feedback loop by implementing in-app feedback mechanisms (e.g., "Was this helpful?" ratings, open text suggestions) to allow for continuous user input and iterative refinement.

5. Ethical AI and Data governance

**Bias detection and mitigation**

Dataset Auditing: Conduct regular audits of the AI's training datasets for potential biases (e.g., gender, cultural, socioeconomic), and apply efforts to diversity and balance the data.  
 Fairness Metrics: Use fairness metrics during model evaluation to detect and minimize discriminatory AI behaviors.

6. Data Analytics and continuous improvement

**Performance monitoring and metrics**

KPI Definition and Tracking

Activity: Establish key performance indicators (KPIs) to assess the AI's success, such as:

User Engagement: Active users, session duration, and frequency of interaction.

Problem Resolution: The percentage of questions addressed directly by AI without human intervention.

Referral Success: Click-through rates on referral links, as well as (if practicable and with appropriate privacy precautions) follow-up on referred services.

Sentiment Analysis: Trends in user sentiment during interactions (e.g., improvement in sentiment after the interaction).

Common Query Analysis: Top inquiries and Emerging Topics

1. **Ethics, intellectual property and confidentiality considerations**

#### Ethics

The UON Peer Connect AI assistant will interact with students and process conversational data, which shows an important ethical consideration regarding privacy, consent, data collection, and psychological safety. "The potential for biased responses, data privacy violations, and unintended psychological effects are well-documented concerns in AI-based conversational agents (Jahanbin & Parvaneh, 2023)."

| **Ethical Risk** | **Potential Impact** | **Mitigation Strategy** |
| --- | --- | --- |
| Privacy breach due to data leakage | Violation of student confidentiality; legal risks | Encrypt data storage; apply strict access controls; comply with Australian Privacy Act |
| Biased AI responses | Unfair treatment of students from certain backgrounds | Regular dataset auditing; implement fairness metrics; involve diverse data sources |
| Misuse by underage users (minors) | Exposure to inappropriate content or emotional harm | Age verification mechanisms; restrict AI scope; mandatory referral to human counsellors for sensitive topics |
| Students assuming AI is a human counsellor | False trust; unmet emotional support needs | Clearly state the AI is a digital assistant; include disclaimers in UI; refer to human services when appropriate |

#### Confidentiality

1. Every conversation between students and AI companions shall remain strictly confidential.
2. Data storage and transmission should comply with Australian data privacy laws (for example, Australia's Privacy Act) and university policies.
3. Wherever possible, personal identifiable information (PII) should be minimized and anonymized.
4. Any insights that are shared with university staff (for system improvement) will be in aggregated and anonymized form to prevent the identification of individual students.d

#### Intellectual Property (IP)

1. All intellectual property related to the AI models, training data, software code, and user interface developed under this project will rest with the University of Newcastle except to the extent where an agreement exists to the contrary.
2. Any third-party libraries or AI platforms used (for example, Dialogflow, Rasa, AWS services) will be properly licensed and referenced.
3. Any conversational content (prompts, response templates) generated in this project is the original work of the project team unless otherwise stated.

**References**

[1] P. Dirac, The lorentz transformation and absolute time, Physica 19 (1-12) (1953) 888-896. doi:10.1016/S0031-8914(53)80099-6.

Jahanbin, A., & Parvaneh, F. (2023). The ethical implications of ChatGPT AI chatbot: A review. *Journal of Multidisciplinary Cases on Educational Research*, 7(3), 1–13.<https://jmcer.org/wp-content/uploads/2023/08/The-Ethical-Implications-of-ChatGPT-AI-Chatbot-A-Review-1.pdf>

Australian Government. (1988). *Privacy Act 1988*. Federal Register of Legislation. https://www.legislation.gov.au/Series/C2004A03712

\*Please note that the reference above is just to show how references are formatted. Please remove it before you submit your project plan and replace it by the relevant references. Note that references can be research papers, textbooks, online documents and webpages.