

Reflective Essay - Intelligent Agents Module

ePortfolio: https://gpressoamorim.github.io/portfolio/#intelligent_agents

1. Introduction

As a postgraduate student in artificial intelligence with a background in medicine and data science, the Intelligent Agents module presented a unique but challenging learning opportunity. This essay reflects on my journey through this module, employing Rolfe et al.'s approach to critical reflection (Rolfe, Freshwater and Jasper, 2001) alongside Gibbs' learning cycle theory (Gibbs, 1988). I will describe the module outcomes (WHAT), discuss my learning journey (SO WHAT), and reflect upon the learning outcomes achieved and their future application (NOW WHAT).

2. Activities performed and learning outcomes ("WHAT")

The Intelligent Agents module focused on developing a deep understanding of artificial intelligence concepts and their practical implementation. Key areas of study included first-order logic, natural language processing, agent architectures, and multi-agent systems. The cornerstone of my learning journey were the team and individual assignments, centered on developing a multi-agent system using Python.

The team project was an insightful experience, allowing me to learn from teammates knowledgeable in computer science and agent architectures. In the individual assignment, I gained hands-on experience with Python programming, unit testing, documentation, database implementation, vector indexing, and semantic search techniques. These elements contributed to a comprehensive understanding of intelligent agents and fundamental programming concepts that were entirely new to me.

The module also included collaborative discussions on topics such as the ethics of agent-based computing, agent communication languages versus method invocation, and the risks and benefits of generative AI. These discussions enhanced our theoretical knowledge and developed our critical thinking skills, encouraging us to consider the societal impact of the technologies we were learning to create.

3. Personal reflection on learning journey ("SO WHAT")

As a medical doctor with experience in data science, I found this module incredibly challenging yet rewarding. My background, while strong in analytical thinking and data interpretation, lacked extensive programming knowledge. This gap made the learning curve steep, particularly when dealing with complex concepts like first-order logic and agent architectures.

The team assignment provided a major learning experience, reflecting the effectiveness of team-based learning in enhancing student engagement and learning outcomes as discussed by Michaelsen and Sweet (2008). I learned a great deal from colleagues with extensive conceptual and technical knowledge. Moreover, I gained valuable experience in navigating complex team dynamics. As Oakley et al. (2004) discuss, learning to manage diverse personalities and skill levels within a group is crucial for educational development. I faced challenges working with teammates who were either overly dominant, dismissive of others' ideas, or disengaged from the project.

This experience taught me invaluable lessons about working in diverse teams and managing conflicting personalities. It pushed me to develop stronger communication skills, assert my ideas constructively, and motivate less participative team members. Oakley et al. (2004) emphasize that these challenges contribute to developing essential soft skills applicable to real-world professional environments, enhancing my ability to work effectively in multidisciplinary teams.

The individual assignment on the multi-agent system was particularly demanding, requiring the integration of theoretical knowledge into a practical, functioning system. I struggled with complex data structures, circular control flow, graphical user interfaces, and unit testing, but each obstacle overcome felt like a significant achievement. I frequently resorted to large language models for assistance, which led me to reflect on the recursive nature of AI in education and development. As these models evolve, we may approach a juncture where AI systems not only enhance their own capabilities but also contribute to creating more advanced intelligent agents, raising both exciting possibilities and important ethical considerations.

The collaborative discussions offered a platform to explore the broader implications of agent-based systems. Debating the ethics of AI and the potential risks of generative AI helped me develop a more nuanced understanding of our responsibilities as AI practitioners, challenging me to consider the societal impact of my work.

4. Learning and changed actions ("NOW WHAT")

The knowledge and skills gained from this module have significantly impacted my approach to data science and AI. In my role as a data scientist in the pharmaceutical industry, I now see numerous opportunities to apply intelligent agent concepts, especially in process optimization, knowledge retrieval, and automated document generation. The natural language processing techniques I've learned could be applied to analyze vast amounts of medical literature and clinical trial data more efficiently. I plan to use the skills gained in developing user interfaces and managing databases to improve internal processes in my company.

The challenges faced in this module improved my confidence in learning and adapting to new technical concepts, which will be invaluable as I navigate the rapidly evolving field of data science and AI in healthcare. I've also gained an improved understanding of the ethical considerations surrounding the use of such technologies in health-related activities.

The team project experience has equipped me with enhanced interpersonal skills that I will apply in my professional life. I now feel more prepared to handle diverse team dynamics, mediate conflicts, and ensure productive collaboration even in challenging team environments.

5. Conclusion

The Intelligent Agents module has been a transformative experience in my postgraduate journey. Despite the initial challenges posed by my non-technical background, I've emerged with a robust understanding of key AI concepts and practical programming skills. The knowledge gained has expanded my perspective on the potential applications of AI in healthcare and pharmaceutical research. This module has not only enhanced my technical capabilities but also reinforced my ability to persevere through complex problems and work effectively in diverse teams. The collaborative discussions have deepened my understanding of the ethical implications of AI, preparing me to make more informed decisions in my professional career.

As I move forward in my role as a data scientist, I am excited to apply these new skills and insights to drive innovation in the pharmaceutical industry. The journey through this module has

reaffirmed my passion for the intersection of AI and healthcare, and I am eager to continue exploring this dynamic field while maintaining a strong ethical foundation and leveraging my improved teamwork skills.

References:

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