



Assignment 1

APSEI - Aspetos Profissionais e Sociais da
Engenharia Informática

Danilo Micael Gregório Silva 113384

1. Introduction

As part of the APSEI course, the first practical assignment consists of writing a report expressing students' opinions on two key points:

1. Should students be allowed to use ChatGPT in this course (APSEI)?
2. Should the professor ALWAYS use automated tools for plagiarism, LLM detection, etc.?

First of all, understanding the purpose of this course is essential before forming an opinion on these topics. So, what does the APSEI course entail? This course aims to provide a general overview of the profession of an Informatic Engineer and its relationship with society, exploring the various professional aspects of being an engineer and encouraging students to reflect on the social impacts of technology and its influence in individuals and communities. Additionally, this course addresses challenges that professionals may face, like ethical dilemmas, decision-making process, and personal implications.

Regarding the first topic, as referenced in [1], ChatGPT is an artificial intelligence chatbot developed by OpenAI that uses natural language processing to create humanlike conversational dialogue. It is a form of generative AI, a type of artificial intelligence that can produce various types of content like images, text or videos. The name GPT stands for "Generative Pre-trained Transformer", describing the model's approach to processing requests and formulating responses. Trained using reinforcement learning, it continuously improves based on user feedback, improving future responses. While ChatGPT can be a valuable tool for learning and productivity, it also raises concerns relating to academic integrity and critical thinking skills. Additionally, this tool not always provides trustworthy answers because they are based on probabilities, as referenced in [2]. These potential benefits and drawbacks will be explored in further detail later in this report.

Regarding the second topic, there are several automated tools like Turnitin, WinstonAI, ZeroGPT and Quillbot to detect plagiarism and AI-generated content. These tools aim to identify non-original content maintaining academic integrity ensuring that students submit authentic work. However, their accuracy and fairness have been widely debated and while some argue that they can help uphold academic honesty, others raise concerns about incorrect detections and challenges in identifying AI-generated content.

In this report I will give my opinion about these two topics, supported by research.

2. ChatGPT in APSEI: Benefits and Challenges

2.1 Should students be allowed to use ChatGPT in this course (APSEI)?

In my opinion students should be allowed to use ChatGPT in this course. As referenced in [3], ChatGPT is like having a “super smart robot friend”, who “knows a lot of things”, so it offers several advantages that can improve the learning process when used correctly. I think that one of the main benefits is its ability to automate repetitive tasks, allowing students to avoid spending time in tasks they already know how to do. Additionally, its constant availability makes it a convenient tool for learning at any time without restrictions. Another key advantage is the ability to reduce search time allowing students to get relevant insights more efficiently, avoiding spending excessive time browsing multiple websites for information. Furthermore, I believe that ChatGPT serves as an excellent complementary tool for research, helping students to understand concepts more clearly, receive tips on how to improve their work, generate ideas and inspiration, and organize tasks more effectively. By doing this, students can focus on more critical aspects of their learning avoiding time-consuming and less important tasks.

However, this tool comes with a cost when not used properly. If students over-rely on ChatGPT they may struggle to develop independent reasoning lacking critical thinking skills. Another downside is the potential risk of misinformation since it is not perfect, and may occasionally provide incorrect or misleading information. Additionally, issues such as plagiarism, data privacy, security risks, and academic integrity should also be considered. But I think that the main disadvantage is the misuse of this tool as a shortcut to complete tasks without any effort. With this I mean, some students might resort to ChatGPT to complete assignments for them, rather than use it as a complement, and this could lead to a lot of problems, some referenced before in this paragraph. For example, asking ChatGPT to write this entire report would be a bad practice, especially a task that requires personal opinions and original thought. However, using it in this course to find information, structure ideas, or clarify concepts is a responsible and beneficial approach.

To conclude, from my point of view students should be allowed to use this tool correctly and with responsibility, avoiding its drawbacks and maximizing the benefits. The appropriate way to do so will be further discussed in section 2.3 of this report.

2.2 If yes, should students be expected to use ChatGPT?

Yes, students are expected to use ChatGPT because it is a tool available to the entire society, where a free version exists, making it accessible to everyone. More importantly, students are expected to use it as a complementary tool rather than relying on it to fully complete their tasks, as mentioned before. I believe that in the context of computer engineering, learning to use AI-based solutions like ChatGPT is a valuable skill for our future careers, as technology continues to evolve. With this, mastering these technologies can become a competitive advantage, preparing us, as students, for professional environments where AI is increasingly integrated into daily workflows. Additionally, ChatGPT can assist in verifying and reviewing work, helping students to identify errors and ensure their explanations are clear and coherent, which is particular useful in projects like this, proposed in APSEI course.

Professors should also expect their students to use ChatGPT, as it facilitates research, provides instant clarification of doubts, and helps structuring and organizing academic tasks. On top of that, it explains concepts clearly and concisely, as it can search the internet to provide objective and accurate answers, as stated in reference [4].

2.3 If yes, should students be incentivized to use ChatGPT in which way?

Students should be strongly incentivized to use ChatGPT and, in my point of view, professors should take an active role in teaching the correct way to do so, helping preparing students for their future careers, where AI-based tools are commonly used. However, proper usage is essential to ensure that us, students, develop our skills rather than rely on AI to do all for us. So, what is the correct way to use AI-based tools like ChatGPT? Some of the following ideas are referenced in [5] and are presented in quotation marks. I believe that one of the most important aspects of responsible AI usage is to “*Use ChatGPT as a Tool, Not a Replacement*”. With this, it should complement students’ learning, assisting them in research, structuring ideas, and refining their writing, rather than doing all of the work for them. Another crucial aspect is to always “*Verify Information*”. As I mentioned before, ChatGPT not always provides the most accurate answers, so it is important to always cross-reference the information that this tool gives with reliable sources. By doing this, students develop the ability to question and research, rather than simply assuming that all information provided by ChatGPT is correct. This, in turn, actually helps to develop critical thinking, what is funny, as it may seem contradictory at first, but is achievable when AI is used properly. Another key benefit that I believe is to use ChatGPT to “*Brainstorm Ideas*”, as it can generate different perspectives, suggest arguments, and help refine our thoughts. With this, students can develop a more critical and analytical mindset. Additionally, we can “*Save Time with ChatGPT*”, by using it to structure essays or to answer questions. Beyond that, AI can also be a valuable resource for reviewing reports, like this one, to identify grammatical errors, and improve clarity and coherence in writing. Furthermore, I think that professors should educate students on both the advantages and limitations of AI-based tools like ChatGPT, including the risks of plagiarism and biases in AI-generated content, helping to develop an awareness of AI ethics and its responsible usage. One last key idea is to use ChatGPT for personalized learning which offers explanations tailored to students’ understanding. For example, I personally use ChatGPT to explain complex concepts in simpler terms and to provide practical examples among the explanation, which helps me understanding topics more effectively than reading theoretical information by my own.

Even so, it is equally important to understand how ChatGPT should not be used. Students should avoid asking AI tools to do all the work for them, as it defeats the purpose of education, and should also avoid to trust AI-generated content blindly, as it is not always correct. Another common mistake is to just copy-paste without understanding, which is ordinary in this area that involves programming tasks. I think that students should always ensure they comprehend the material rather than simply submitting AI-generated content as their own.

I strongly believe that ChatGPT can be a valuable tool for learning, but, for this, students should be incentivized to use it in a proper way, just like I described in this section. One more

thing to say, my opinion would be the same whether there were 2 or 2000 students, or even regardless of which course we're talking about. It's not something that changes based on class size or subject – it scales either way.

2.4 And can/should professors follow the same rules as the students? That is: use ChatGPT to classify and grade the students work?

I think that professors, just like students, could also use ChatGPT as a tool to assist in their work. But this means that, just like students, there is a responsible way to do so, I mean, the same rules are applied for professors. Does that mean they should rely entirely on ChatGPT to classify and grade students' work? Not necessarily. Using AI in grading has both advantages and drawbacks, and professors, just like students, should use this tool with limitations.

On the positive side, ChatGPT can increase efficiency in grading, especially in repetitive tasks like checking grammar, analyzing structure, or even verifying the logic and clarity behind an argument. Additionally, it can provide automated feedback, offering suggestions to improve students' work, what is useful for the professor in order to give them that feedback and analysis. ChatGPT can also help standardize evaluations, ensuring consistency in grading and reducing potential biases.

However, there are significant risks in only relying on AI for grading. One major issue is the risk of superficial evaluations, as ChatGPT doesn't truly understand the depth of a student's creativity, which can lead to inaccurate assessments. As we know, critical thinking in grading is essential, and evaluating a student's work is not just about identifying mistakes but also interpreting their thought process, something that ChatGPT cannot fully replicate as it cannot "understand" like a human. Finally, there is also an ethical concern. With this I mean, if students know their work is being graded by AI rather than a human, they may feel the evaluations lacks fairness or personal consideration. But the same applies for them, students shouldn't also rely on ChatGPT to fully complete their assignments, as it violates education system purposes.

Just as students should not use AI-based tools to do all their work, professors should not simply submit an assignment and accept the AI's evaluation without review. ChatGPT can be an extraordinary tool to support the grading process, helping with objective criteria or suggestions on areas of improvement, but should not be a replacement, evaluating by its own. This means, the final judgement should always belong to the professor, ensuring the assessments remain fair, personalized, and reflective of each students' real understanding.

3. Use of Automated Evaluation Tools

Tools like Turnitin, Quillbot, ZeroGPT and WinstonAi provide indications on level of non-originality and can help professors to detect AI-generated content from students' work.

3.1 Should those tools be run over all the works from students, and their ranking value impact the final grade?

First of all, it is important to know how this tools work before giving an opinion about this topic. Therefore, understanding its benefits and drawbacks can lead to a clear and concise opinion based on research. AI has been growing rapidly, and many students have been using – and sometimes overusing – it in their academic assignments. As a result, professors are considering AI detection tools to maintain academic integrity. However, as referenced in [6], *“in higher ed, many are choosing to stand back and wait, worried that new tools for detecting AI-generated plagiarism may do more harm than good”*.

So, how do plagiarism detection tools work?

In order to understand how this tools work, I focused my research on a specific tool, WinstonAI, as the information in this section is based on it and sourced from reference [7]. And, to verify and complement this information, I personally tested this tool using this report to evaluate AI-generated content.

So, WinstonAI is described as *“the world’s most powerful AI-generated content detector”*, relying on extensive training data from widely used AI models, including GPT-4, ChatGPT, Jasper, and Bard. As the website explains, its detection method combines linguistic analysis with pattern recognition algorithms to determine whether a text was AI-generated or human-written. A key element in this detection process is perplexity, which *“gauges the efficacy of a probability distribution or a language model in forecasting a given sample”*. AI-generated text tends to have lower perplexity because it follows learned patterns, while human writing is more unpredictable. Another measure is burstiness, referring to how AI text *“tends to employ specific words and phrases more frequently than humans would”*. This lack of variation can be a sign that the text was written by AI. To quantify results, WinstonAI provides a Human Score, which estimates the likelihood that a text was written by a human. Importantly, *“a score of 80% human and 20% AI doesn’t mean that only 20% of the content was generated by AI; rather, it means that Winston has an 80% confidence level that the content was created by a human”*. Additionally, the tool includes an AI Prediction Map, which highlights words based on their predictability, providing more insights into whether a text follows AI-generated patterns. While WinstonAI claims a 99.98% accuracy rate, it acknowledges that detection is a probabilistic approach rather than an absolute judgment. As stated on the website [7], *“our team is always keeping up with the new language generation models”* to maintain accuracy as AI continues to evolve.

Benefits of using these tools

The use of AI detection tools brings several advantages, especially when it comes to maintain a fair evaluation process. Manually reviewing large volumes of student submissions for potential AI-generated content is highly time-consuming. However, AI detection tools automate this process, allowing professors to focus on providing feedback and improving teaching quality instead of spending hours verifying text authenticity. Plus, these tools provide instant results, significantly reducing the workload for teachers. I think that, beyond just saving time, AI detection tools can also serve as valuable educational resources as they can help students understand how to

improve their writing and develop critical thinking skills, by highlighting sections that may be AI-generated. Additionally, some tools offer readability scores and linguistic analysis, just like WinstonAI – the tool I personally tried using this report – giving teachers insights into students' writing so they can provide more targeted feedback. Instead of simply acting as punitive measures, these tools can actually support students in building better writing habits. Another major benefit of AI detection tools is that they help ensure consistency in evaluations. Traditional plagiarism detection often relies on human judgment, which can sometimes be subjective or inconsistent. In contrast, AI detection tools apply standardized methodologies to all students, making the process fairer. With features like "probability scores" that indicate how likely a text was AI-generated, professors can make informed decisions without bias. As a result, grading becomes more uniform, and academic policies are enforced more objectively. In my opinion, integrating these tools into the academic evaluation process can promote fairness, uphold academic integrity and provide useful feedback on students' work, reducing the time required for assessment. However, there are also some drawbacks that should be considered.

Limitations and Concerns

I believe that one of the biggest concerns about AI detection tools is the possibility of false positives. These tools may incorrectly flag human-written content as AI-generated, leading to unfair accusations. As mentioned on the website [7], factors such as "*sentence structure, predictability, and lack of variation*" can influence detection. However, these same characteristics are often present in legitimate human writing, which raises concerns about students being penalized for work they completed honestly. Another challenge is that these tools are not always comprehensive, I mean, despite their advanced capabilities, they are not foolproof, and some AI-generated texts can slip through detection by making subtle modifications. As the website [8] points out, "*no AI Detector can provide complete accuracy*", and, in reference [9], "the highest accuracy we found was 84% in a premium tool or 68% in the best free tool", meaning that professors should rely on them as a helpful guide rather than treating their results as absolute proof. Additionally, the use of AI detection tools may unintentionally discourage creativity in student writing. Those who naturally write in a structured, clear, and repetitive style may find their work flagged as AI-generated, even when it is entirely original. This could lead students to overcomplicate their writing in an attempt to avoid detection, shifting their focus from quality and clarity to simply bypassing AI evaluation. Another significant limitation is that these tools may struggle to differentiate between proper citation and improper plagiarism, what can be a very serious problem.

Should professors use these tools and their ranking value impact final grades?

In my opinion, professors should use these tools to evaluate AI-generated content, but their ranking should not impact directly in proportion students' grades, as there are chances of false positives and a lot of other drawbacks that could lead to an unfair evaluation process. These tools should be used as a guide and a complement, just like I said about ChatGPT. So, professors should always review flagged sections to determine if plagiarism has actually occurred, and the

final judgement should always belong to the professor, not the tool. In my point of view, automated tools are valuable assistants for detecting plagiarism and AI reliance, but they should not replace human judgement. The best approach is the combination of technology and manual review, ensuring fairness and maintaining academic integrity.

4. Conclusion

Both AI tools and AI detection tools offer significant advantages when used correctly. They can improve productivity by automating tasks and assisting in content creation or evaluation. However, it is essential to use them with caution and restrictions. As powerful as they are, these tools are not always 100% accurate, which means relying on them blindly can lead to errors or misinterpretations. The best approach is to use these tools as a complement rather than a replacement. AI detection should support human judgment, not replace it, ensuring fair and well-informed decisions. Similarly, AI-powered writing tools can be helpful, but they should enhance creativity rather than take over the creative process.

5. References

- [1] <https://www.techtarget.com/whatis/definition/ChatGPT>
- [2] <https://www.scribbr.com/frequently-asked-questions/how-does-chatgpt-work/>
- [3] <https://www.semrush.com/blog/benefits-chatgpt/>
- [4] <https://openai.com/index/introducing-chatgpt-search/>
- [5] <https://myjotbot.com/blog/how-to-use-chatgpt-for-school>
- [6] <https://www.insidehighered.com/news/tech-innovation/artificial-intelligence/2024/02/09/professors-proceed-caution-using-ai>
- [7] <https://gowinston.ai/interpreting-our-ai-detection-scores/>
- [8] <https://www.scribbr.com/ai-detector/>
- [9] <https://www.scribbr.com/ai-tools/how-do-ai-detectors-work/>