

Discussion-1 Software Engineering and AI

Discussion Topic:

Part 1:

Choose a technological innovation that has arisen since the Internet Age (2000 - Present) and its artifact or tool. Then, discuss why it has been beneficial or detrimental to humanity. Support your discussion with examples or actual cases.

Part 2:

Research a company that uses the technological innovation that you identified in Part 1.

What are the ethical policies of this company with respect to the positions offered and the education levels of the employees?

List a few positions that can be found on the organization's website.

From an ethical perspective, do the positions listed appeal to your career objectives?

My Post:

Hello Class,

This discussion topic took me down a deep rabbit hole, it was more work than I wanted to put into it; however, reflecting on how the emergence of AI has affected and is affecting my education path and future career choices was worthwhile

Open AI CEO Sam Altman revealed in a Q/A session at the University of Tokyo (UTokyo) that an internal OpenAI large reasoning model ranks 50th best coder in the world, and he predicted that by the end of 2025, a large reasoning model will rank 1st (UTokyo Center for Global Education, 2025). This post examines the benefits and drawbacks of Artificial Intelligence (AI), and how AI is impacting my education path and future career choices. It also explores career opportunities at a start-up AI company called Inworld AI.

The term 'Artificial Intelligence' (AI) was first introduced in 1956 by John McCarthy, a professor at Dartmouth College. He used the term to name a summer workshop, Dartmouth Summer Research Project on Artificial Intelligence, organized to clarify and develop ideas about 'thinking machines' (Science and Technology (DDST), n.d.). Large language models (LLMs) are a type of AI that are trained on massive amounts of text data, they can understand and generate human-like text. LLMs came into the spotlight with the release of the chatbot ChatGPT by OpenAI in November 2022. Since then, the LLMs have evolved into large reasoning models such as o1, DeepSeek R1, and o3, having expert or PhD level capability in mathematics, physics, coding, and other STEM fields. They have also evolved into generative AI models capable of generating realistic images, videos, voices, and music. AI as it stands today is often defined as a transformative technology and a revolutionary force that is redefining numerous industries in the ever-changing landscape of modern technology (Zatzu et al., 2024). The potential for AI to be

beneficial to humanity is immense; however, it will also fundamentally reshape how people live and work, presenting potential dangers and ethical issues.

The Benefits and Drawbacks of AI – Ethical Concerns

The table below lists several benefits as well as drawbacks and dangers of AI.

Table 1
AI's Benefits, Drawbacks, and Dangers

Category	Aspect	Description
Benefits of AI	Automation of Tasks	Repetitive tasks, increasing efficiency and freeing up human workers for more complex roles.
	Enhanced Healthcare	Diagnosis, drug discovery, and personalized medicine, lead to earlier diagnoses and more effective treatments.
	Improved Education	Personalize learning, automate grading, and provide 24/7 student support. AI can also predict academic performance and identify at-risk students.
	Enhanced Customer Service	Chatbots and virtual assistants can provide instant support.
	Scientific Discovery	Accelerating scientific progress by analyzing large datasets and identifying patterns.
Drawbacks & Dangers of AI	Job Displacement	AI automation probably will lead to job losses and may increase unemployment.
	Bias and Discrimination	AI can inherit and amplify biases from training data, leading to unfair outcomes.
	Privacy and Security Risks	AI relies on large amounts of personal data, concerns about privacy violations, and data breaches.
	Lack of Transparency/Explainability	Many AI algorithms are "black boxes," making it difficult to understand their decision-making processes.
	Potential for Increased Human Laziness	Over-reliance on AI can affect negatively human cognitive abilities and critical thinking skills.
	Adversarial Attacks	AI systems are vulnerable to prompt injections that manipulate inputs or exploit weaknesses.
	Market Volatility	AI-driven trading could increase market volatility and increase financial risks.

Note: The table lists the main benefits, drawbacks, and dangers of AI. From several sources (Rowan University n.d.; St. George University 2024; Takyar, n.d.; Singh, 2025; University of Cincinnati, n. d.; Von Der Osten, 2023; Capitol Technology University, 2023; D’Antonoli, 2020; Thomas, 2024;Virginia Tech Engineer, 2023; Fardian, 2022;Georgieva, 2024)

As shown by Table 1, AI has many benefits, as well as many drawbacks. My main ethical concern is how it is already used and will be used in the future to replace human workers. Salesforce, a major SaaS company, announced that in 2025 it will not be hiring any more software engineers amid significant productivity boosts from AI (Martin, 2024). Additionally, by the end of this year, 2025, agentic AI capable of autonomously executing complex tasks, and AGI (Artificial General Intelligence), AI capable of performing any intellectual task that a human being can, are predicted to be available and starting to be deployed. In a society where AI is more efficient, productive, and cheaper than its human counterpart, the potential for widespread job displacement and employment is a very serious concern as well as a serious political and ethical issue.

AI Impacts in My Education Path and Future Career Choices

I started my journey in computer science education in 2021, before LLM chat boxes like ChatGPT were a thing, meaning before they became available or had an impact. Now, as a senior at Colorado State University Global, I have changed my computer science degree focus from software engineering to a specialization in AI (Artificial Intelligence) and have decided to pursue further my education by pursuing a master's in AI. However, given how fast AI is evolving and how powerful AI systems are becoming, there is a good possibility that by the time I finish my education, my education will not matter as most software applications and potentially many other applications/tasks across many different fields, will likely be designed, implemented, and maintained by AI systems and a small team of humans. Nonetheless, I hope to work in implementing AI-LLM within applications, one of my dream jobs would be to integrate LLMs and AI within video games.

AI Start-Up Company Inworld AI

Several companies are at the forefront of AI integration within video games. These companies include Google DeepMind, Inworld AI, Rockstar Games, Electronic Arts (EA), NVIDIA, Unity Technologies, Epic Games, Houdini, and Latitude.io. Each company has a slightly different and interesting approach to integrating AI into video games. However, this post will focus on Inworld AI which specializes in creating and integrating AI-driven virtual characters also called NPCs (non-player characters). Inworld AI is the leading Character Engine for adding AI NPCs in video games (Inworld Team, 2024a). "A Character Engine is a development environment that offers a suite of tools and features that help game developers create and deploy real-time generative AI-powered NPCs in video games" (Inworld Team, 2023b). Inworld AI recently announced that they have formed a co-development partnership with Xbox/Microsoft to create AI NPCs with a wide range of emotions and behaviors. These NPCs will feature long-term memory, goals, actions, awareness of being in a game ('4th Wall' – remember past in-game interactions), configurable safety settings, and dynamic relationships. The NPC will also feature knowledge constraints to ensure that they only act on information appropriate for their character. Additionally, Inworld technology integrates well with popular game engines like Unity and Unreal Engine, developers utilize Inworld AI's API for creating smart NPCs in games like Skyrim and RPGs developed by companies like Niantic and Netease Games (Weitzman, 2023).

Gibbs (2022), CEO of Inworld, recognizes, in his blog post “Inworld’s commitment to safety,” that AI-driven creative technologies require careful consideration. He outlines Inworld's approach to safety through the following guidelines:

1. Clear restrictions and guidelines with explicit rules and guidelines to control the content that can be created on the Inworld AI platform.
2. Developer control, providing the tools and control to ensure the content that developers create is appropriate for their intended audience.
3. Reporting and moderation of all conversations and characters on Inworld platforms, are subject to reporting and moderation processes.
4. Extensive safety systems and integrated guard rails are built into all Inworld characters.
5. Ongoing monitoring and improvement to continuously monitor and improve safety.

Furthermore, Inworld's guidelines prohibit the creation of characters or content that promotes illegal activities, hate speech, violence, or the violation of user privacy. This approach aligns with the ethical guidelines adopted by most AI companies. These guidelines also align with my ethical values, making Inworld AI a company that a company that I would be proud to work for.

As of February 2025, Inworld AI is rapidly growing and offers a variety of career opportunities, with positions ranging from financial controllers to recruitment officers. Additionally, it has several opportunities that are relevant to my AI specialization and my career goals. The table below lists those positions, along with their description and requirements.

Table 2

Inworld AI Career Opportunities Software Engineering/AI, February 2025

Position	Salary Range	Education Level	Qualifications	Nice to Have	Responsibilities
Senior C++ Developer Vancouver, BC, Canada	\$150,000 - \$200,000 (Canadian dollars)	Bachelor's degree or equivalent experience	3+ years C++ experience, Senior-level software engineering experience, Strong data structures/algorithms/design patterns/OOP, Proficiency with CMake.	Familiarity with Unreal/Unity, Experience with multi-platform development (Android/iOS/Consoles), Experience with AI models (device/cloud), Experience with SDKs/tools.	Work on AI-related projects to integrate Inworld AI technologies into games.
Senior C++ Developer Mountain View, CA, USA	\$150,000 - \$220,000	Bachelor's degree or equivalent experience	3+ years C++ experience, Senior-level software engineering experience, Strong data structures/algorithms/design patterns/OOP, Proficiency with CMake.	Familiarity with Unreal/Unity, Experience with multi-platform development (Android/iOS/Consoles), Experience with AI models (device/cloud), Experience with SDKs/tools.	Work on AI-related projects to integrate Inworld AI technologies into games.
Senior SDET – Game Engine SDKs Vancouver, BC, Canada	\$120,000 - \$160,000 (Canadian dollars)	Bachelor's degree or equivalent experience	5+ years software/game dev experience (C++, C#, or similar), Experience with Unreal or Unity, Experience with automation tools and CI/CD (GitHub Actions, Jenkins, etc.).	Game dev experience (tools/automation), QA background, Multi-platform build/test experience (Android, iOS, Mac), Familiarity with LLMs, Experience with Playwright/Cypress.	Design/create/maintain automation tools, Create/manage CI/CD pipelines, Propose/create QA tools, Collaborate on automation plan, Build/maintain QA demo test suites/rooms.

Senior SDET – Game Engine SDKs Mountain View, CA, USA	\$120,000 - \$200,000	Bachelor's degree or equivalent experience	5+ years software/game dev experience (C++, C#, or similar), Experience with Unreal or Unity, Experience with automation tools and CI/CD (GitHub Actions, Jenkins, etc.).	Game dev experience (tools/automation), QA background, Multi-platform build/test experience (Android, iOS, Mac), Familiarity with LLMs, Experience with Playwright/Cypress.	Design/create/maintain automation tools, Create/manage CI/CD pipelines, Propose/create QA tools, Collaborate on automation plan, Build/maintain QA demo test suites/rooms.
Staff Platform Engineer Vancouver, BC, Canada	\$170,000 - \$220,000 (Canadian dollars)	Bachelor's degree or equivalent experience	7 years software engineering, 5 years infrastructure-as-code, Kubernetes proficiency (Kustomize/Helm), CI/CD pipeline experience (Terraform/Terragrunt, ArgoCD, GitHub Actions, Ansible), Deep knowledge of a major cloud provider, Backend programming (Golang, Python, Bash).	Experience with GPUs.	Work with backend/ML teams on cloud infrastructure, Facilitate "you build it, you run it" culture, Manage CI/CD pipelines, Enhance engineering speed, Conduct root cause analysis, Develop best practices.
Senior Unreal Engine Developer Vancouver, BC, Canada	\$150,000 - \$200,000 (Canadian dollars)	Bachelor's degree or equivalent experience	3+ years Unreal Engine experience, 5+ years interactive software experience, Proficiency in C++ and CMake, Strong data structures/algorithms/design patterns/OOP.	Multi-platform development (iOS, Android, consoles), Experience with animation/materials/lighting/particles, Experience with SDKs/tools.	Work on technical demos and interactive AI experiences, Build Inworld SDK.
Senior Unreal Engine Developer Mountain View, CA, USA	\$150,000 - \$220,000	Bachelor's degree or equivalent experience	3+ years Unreal Engine experience, 5+ years interactive software experience, Proficiency in C++ and CMake, Strong data structures/algorithms/design patterns/OOP.	Multi-platform development (iOS, Android, consoles), Experience with animation/materials/lighting/particles, Experience with SDKs/tools.	Work on technical demos and interactive AI experiences, Build Inworld SDK.
Staff / Principal AI Researcher Mountain View, CA, USA	\$240,000 - \$385,000	PhD or equivalent in CS/ML/AI	Strong ML research background (publications/contributions), Experience training large models, Proficiency with ML frameworks (PyTorch, TensorFlow, JAX), Knowledge of advanced AI architectures, Python programming.	Experience with pre-training, fine-tuning, evaluating LLMs (LLaMA, Mistral, Qwen).	Conduct cutting-edge research, Develop/implement novel ML techniques, Train/evaluate large-scale models, Collaborate with teams, Communicate results, Mentor junior researchers/engineers.
Staff / Principal Machine Learning Engineer Mountain View, CA, USA	\$240,000 - \$385,000	BA/BS or higher in CS/Engineering	6+ years software development (Python/C++), 4+ years applying ML algorithms (NLP/speech processing/action-planning), Fluency with ML frameworks (PyTorch, TensorFlow, JAX).	Experience with fine-tuning and evaluating LLMs, Experience with embedded systems/running ML on edge devices.	Research/experiment with ML models/techniques, Develop production-scale infrastructure for ML models, Provide guidance/mentorship.

Note: the table provides several Inworld AI career opportunities in software engineering/AI as of February 2025. Data from “A career at Inworld is a game changer” by Inworld AI (2024).

With the exception of the Staff / Principal AI Researcher position, which requires a PhD, my education level after completing my master's will meet the minimum requirements for these positions. However, I would lack the required professional experience, as most are senior-level positions requiring 3 to 6 years

of experience. This is understandable, as Inworld is a startup and needs to build its base employee pool with experienced professionals. Hopefully, by December 2026 (the estimated graduation date for my Master's in AI) internships or junior-level positions will be available. However, with the emergence of AI being capable of producing functional code in seconds, and often of better quality than expert coders, and with most junior software engineering positions are mostly focused on coding rather than design, Inworld AI having open junior software engineering seems uncertain, even if the companies are very successful. I hope pursuing and graduating with a master's in AI will give me an edge, making me more competitive in the job marketplace.

Summary

AI is transforming technology that brings immense benefit to humanity; however, it is fundamentally reshaping how people live and work, presenting potential dangers and ethical issues. As a student in computer science, my main ethical concern is how it is already used and will be used in the future to replace human workers, more specifically knowledge workers. AI has already impacted my education path and my career choices in a significant way. AI start-up companies such as Inworld are hiring software engineers and AI developers. However, by the time I graduate with my master's in AI, I am not guaranteed that the job market will look the same, or that traditional software engineering roles will even be as widely available as agentic AIs are predicted to be more efficient and cost less than their human counterparts. Although the future seems concerning, I firmly believe that AI has the potential to "benefit all humanity" (OpenAI, 2023); however, it is up to humanity to ensure that it does.

-Alex

References:

Capitol Technology University (2023, May 30). *The ethical considerations of Artificial Intelligence*. Capitol Technology University. <https://www.captechu.edu/blog/ethical-considerations-of-artificial-intelligence>

D'Antonoli T., A. (2020, July 23). Ethical considerations for artificial intelligence: an overview of the current radiology landscape National Library of Medicine. *Diagnosis Interventional Radiology*, 26(5), p. 504-511. <https://dirjournal.org/articles/doi/dir.2020.19279>

Fardian, D. (2022, July 1) *5 biggest limitations of Artificial Intelligence*. Glair AI. <https://glair.ai/post/5-biggest-limitations-of-artificial-intelligence>

Georgieva, K. (2024, January 14). *AI will transform the global economy. Let's make sure it benefits humanity*. IMF Blog. <https://www.imf.org/en/Blogs/Articles/2024/01/14/ai-will-transform-the-global-economy-lets-make-sure-it-benefits-humanity>

Gibbs, K. (2023, November 9). *Inworld's commitment to safety*. Inworld AI. <https://inworld.ai/blog/inworlds-commitment-to-safety>

Inworld Team (January 02, 2024a). *Future of AI in gaming: Generative AI companies*. Inworld AI. <https://inworld.ai/blog/future-of-ai-in-gaming-generative-ai-companies?>

Inworld Team (September 2023b). *Why Character Engines are game engines for AI NPCs*. Inworld AI. <https://inworld.ai/blog/future-of-ai-in-gaming-generative-ai-companies?>

Inworld AI (n.d.). A career at Inworld is a game changer. Inworld AI. <https://inworld.ai/careers>

Martin, H.(2024, December 18). *Salesforce will hire no more software engineers in 2025, says Marc Benioff*. Salesforce Ben. https://www.salesforceben.com/salesforce-will-hire-no-more-software-engineers-in-2025-says-marc-benioff/?utm_source

OpenAI (2023, February). *Planning for AGI beyond*. OpenAI. <https://openai.com/index/planning-for-agi-and-beyond/>

Rowan University (2024). *Ways AI can improve our world*. Rowan University. <https://irt.rowan.edu/about/news/2024/10/ai-benefits.html#:~:text=It%20can%20handle%20boring%2C%20repetitive,as%20images%2C%20text%20and%20music.>

Science and Technology (DDST) (n.d.). *The birth of Artificial Intelligence (AI) research*. DDST. <https://st.llnl.gov/news/look-back/birth-artificial-intelligence-ai-research>

Singh, P. (2025, January 29). *The transformative impact of Ai in finance: Key use cases*. Appinventiv. <https://appinventiv.com/blog/ai-in-finance/>

St. George University (2024, March 26). *10 Innovative examples of AI in medicine*. St. George University School of Medicine. <https://www.sgu.edu/blog/medical/ai-in-medicine-and-healthcare/>

Takyar, A. (n.d.). *AI in education: Use cases, benefits, solution and implementation*. Leeway Hertz. <https://www.leewayhertz.com/ai-use-cases-in-education/>

Thomas, M. (2024, July 25). *14 Risks and dangers of Artificial Intelligence (AI)*. Built In. <https://builtin.com/artificial-intelligence/risks-of-artificial-intelligence>

University of Cincinnati (n.d.). *9 benefits of Artificial Intelligence (AI) in 2024*. University of Cincinnati Online. <https://online.uc.edu/blog/artificial-intelligence-ai-benefits/>

UTokyo Center for Global Education (2025, February 5). Dialogue at UTokyo GlobE #14: Mr. Sam Altman and Mr. Kevin Weil (CEO and CPO of Open AI) [Video].

YouTube. <https://www.youtube.com/watch?v=8LmfkUb2uIY&t=7s>

Virginia Tech Engineer (2023). *AI—The good, the bad, and the scary*. Virginia Tech. <https://eng.vt.edu/magazine/stories/fall-2023/ai.html>

Von Der Osten, B. (2023, May 23). *Artificial Intelligence Pros and Cons: What are the Advantages and Disadvantages of AI*. Rock Content. <https://rockcontent.com/blog/artificial-intelligence-pros-and-cons/>

Weitzman, C. (2023, November 4). *Inworld AI: Revolutionizing gaming with AI-driven NPCs*. Speechify. <https://speechify.com/blog/inworld-ai/>

Zatzu, V., Shine E., A., Tharaka, J., M., Peter, D., Ranganathan, T., V., Alotaibi, S., S, Mugabi, R., M., Muhsinah, A., Ab, Waseem, M., & Nayik, G , A. (2024, December 30). Revolutionizing the food industry: The transformative power of artificial intelligence-a review. *Food Chemistry: X*, 24. <https://doi.org/10.1016/j.fochx.2024.101867>