Module 2: Propositional Logic

Discussion Topic:

After reading the article "Even Good Bots Fight: The Case of Wikipedia", discuss how AI plays a role in communicating with other technology and humans.

How do you think technology will change the way bots interact with each other?
What would you like to see implemented that would make your life easier?

Last week, we delved into the fascinating world of AI in chess, exploring how advancements in artificial intelligence have revolutionized chess strategy and provided broader insights into AI applications. This week, we're shifting our focus to another intriguing aspect of AI - how it communicates and interacts with both technology and humans.
To kick off our discussion, we'll be reading the article "Even Good Bots Fight: The Case of Wikipedia." This article offers a compelling examination of the interactions between bots on Wikipedia, shedding light on the unexpected conflicts that can arise even among well-intentioned AI agents. As you read, consider the underlying mechanisms that drive these interactions and the implications they have for broader AI communication systems.

Let's discuss how AI plays a role in communicating with other technology and humans. Think about the principles we've covered and apply them to the interactions between Wikipedia bots. What are the strengths and weaknesses of AI communication as demonstrated in this context? Reflect on how technology might evolve the way bots interact with each other. With advancements in machine learning, natural language processing, and ethical AI design, what changes do you foresee in bot-to-bot communication? Consider both the potential improvements and the challenges that may arise. Additionally, consider your own experiences and needs. What specific implementations of AI or improvements in bot communication would make your life easier? Whether it's in your professional field, personal life, or educational journey, think about how AI could be harnessed to address everyday challenges.

You may find the following article helpful:
Wikipedia bots spent years fighting silent, tiny battles with each other/
To get us started, let's think about a scenario: Imagine a future where AI-powered personal assistants not only help manage our schedules but also communicate seamlessly with each other to optimize our daily routines. How would this change your day-to-day life? What new possibilities or efficiencies could this bring?
Looking forward to hearing your thoughts and ideas as we explore these concepts together!

My Post:

Hello Class,

Bots have been used to communicate with humans for a few decades, starting as early as the 1980s with Interactive Voice Response (IVR) systems. These systems are typically used to answer customer calls, like those used by banks where you say "yes" or "representative" to be automatically connected (Pawlewicz, n.d.). They have also been used to communicate with sensors or data. LabBot is an excellent example; it uses a Telegram bot that can be programmed to monitor sensor data and send automatic warning messages when the sensor exceeds limits (Alexriss, n.d.). A Telegram bot uses the Telegram messaging service app., to communicate with users allowing users to send commands and receive information, such as sensor readings or control outputs from devices (Victor, 2020). However, one of the most fascinating bot interactions is when bots interact with each other. The article "Even Good Bots Fight: The Case of Wikipedia" by Tsvetkova et al. (2017) is a study that analyzes the interactions between Wikipedia bots between 2001 and 2010. Most Wikipedia bots are designed to edit and link Wikipedia articles, the study found that the bots often end up undoing each other's edits, sometimes leading to prolonged editing conflict between bots.

What is a Bot?

A bot is a program or a collection of programs that performs automated tasks usually over the Internet. In the context of the Wikipedia encyclopedia, bots are owned by Wikipedia editors and can perform a wide range of tasks, from fixing broken links and categorizing pages to undoing acts of vandalism on Wikipedia (Kohli, 2018). They can be considered a form of Narrow AI. Narrow AIs are systems designed to perform specific tasks and operate under limited constraints (Awan, 2023).

Wikipedia Bots Interactions

Wikipedia Bots are programmed to perform specific tasks like editing, linking pages, or correcting errors (Kohli, 2018). Bots, in some cases, make over 50% of the edits in smaller Wikipedia language editions (Tsvetkova et al., 2017). This editing task and maintaining datasets, notably large datasets would be overwhelming for humans alone. Thus, the bots play a crucial role in maintaining and keeping the encyclopedia up-to-date and relevant. However, during the period from 2001 to 2010, Wikipedia bots were known to undo each other's edits repeatedly and could be described as "bot wars" or bots editing wars (Godosh, 2017). These editing war-like conflicts, in some cases, went on for years wasting time and resources. This occurred because the bots were following slightly different editing rules or interpretations of how to edit articles and were not programmed to collaborate. Moreover, this highlights the challenges involved in creating logical agents that follow a rigid set of rules. Logical agents are AI agents that act based on a Knowledge Base (KB) (and a set of rules) to infer (to derive) new knowledge or make decisions accordingly (Russell & Norvig), in the case of the Wikipedia bots to or not to edit or undo edits. In other words, Wikipedia bots reflect the shortcomings of Narrow AIs which have narrow KB, lack flexibility, and are missing contextual understanding needed for deep communication and collaboration.

The Future of Bots

However, with the emergence of Large Language Models based on the Transformers neural network architecture such as ChatGPT and Claude, bots can be transformed into AI agents capable of autonomy performing more than just one narrow task but a multitude of tasks, capable of communicating, collaborating, delegating, and even hiring other AI Agents and human. According to an Accenture Report (2024, p. 73), "96% of executives agree that leveraging AI agent ecosystems will be a significant opportunity for their organizations in the next three years." Fully agentic AI is predicted to appear on mobile devices and PCs as early as 2025. This will fundamentally transform how people from the modern industrialized society learn, work, communicate, and live their daily lives, as well as impact the rest of humanity, hopefully for the better…

What I would to see implemented.

I would like to talk to my computer and ask it to perform tasks for me, such as opening a file for me while I am writing a paper in a different file or coding. In other words, I want an AI Agentic Operating System for PCs capable of interfacing through voice, vision, and text; including mouse, keyboard, and touch screens. This would allow me to multitask more efficiently, making my life much easier.

On a more serious note, the 2024 Nobel Prize in Physics went to J. Hopfield and G. Hinton for machine learning discoveries. Hilton also called the godfather of AI, said "I am worried that the overall consequence of this might be systems more intelligent than us that eventually take control" (Pollard & Ashlander, 2024, p1). Hinton's concerns are grounded and very real. However, my main concern, not to dismiss Hilton's concern, is that AI will generate a greater gap between industrialized countries and developing nations exacerbating existing inequalities; and in the long run, creating a speciation situation of the human race (e.g. augmented and none-augmented human)—Between those that can afford human augmentations brought through AI and technologies such as Crisper, Anti-Aging, and Neuralink. and those that can't. Thus, what I really would like to see is the implementation of AI that benefits not just a select few, but humanity as a whole.

-Alex

References:

Accenture Report (2024, January 9). *Technology Vision 2024: Human by design* [PDF-Slides]. Accenture. https://www.accenture.com/content/dam/accenture/final/accenture-com/document-2/Accenture-Tech-Vision-2024.pdf#zoom=40

Alexriss, (n.d.). LabBot. Github. https://github.com/alexriss/labbot

Awan, A. (2023, June 2023). *What is narrow AI?* Datacamp. https://www.datacamp.com/blog/what-is-narrow-ai

Godosh, S. (2017, February 27). *Wikipedia bots spent years fighting silent, tiny battles with each other*. Popular Science. https://www.popsci.com/wikipedia-bots-fighting/

Kohli, N. (2018, October 16). *The bots that help run Wikipedia* [Video].

Strange Loop Conference – YouTube. https://www.youtube.com/watch?v=mOmLiAPdF0Y&t=50s

Pawlewicz, K. (n.d.) *A history of customer service.* Olark. https://blog.olark.com/the-history-of-customer-service

Pollard, N., & Ahlander, P. (2024, October 2024). Nobel physics prize 2024 won by AI pioneers John Hopfield and Geoffrey Hinton. Reuter. https://www.reuters.com/science/hopfield-hinton-win-2024-nobel-prize-physics-2024-10-08/

Tsvetkova, M., García-Gavilanes, R., Floridi, L., & Yasseri, T. (2017). *Even good bots fight: The case of Wikipedia*. *PLoS One, 12*(2).

Russell, S. & Norvig, P. (2021). 7. Logical Agent. *Artificial intelligence: A modern approach. 4th edition*. Pearson Education, Inc. ISBN: 9780134610993; eISBN: 9780134671932.

Victor (2020, July 9). *Telegram: Request ESP32/ESP8266 sensor readings (Arduino IDE)*. Random Nerd Tutorials. https://randomnerdtutorials.com/telegram-request-esp32-esp8266-nodemcu-sensor-readings/