Multimodal Discourse Analysis of Doraemon's Gadgets Mirroring Today's Artificial Intelligence

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ABSTRACT

The research paper analyses the seemingly parallel similarities of the overall features of Generative AI and Agentic AI with the popular anime character-Doraemon, a male blue robotic cat that travels back in time from the 22nd century to assist a teenage boy in Japan called Nobita Nobi in his everyday activities, right from assistance in schoolwork to his personal endeavours, by providing futuristic tools and gadgets from its four-dimensional pocket. Conceptualised by manga artists duo-Hiroshi Fujimoto and Motoo Abiko, also commonly known as Fujiko Fujio, the series was first made into manga series from 1969, which was later made into an anime by TV Asahi in 1979, and was later released throughout the world through Disney. Though the series was released in the 20th century, the anime's core story and themes were futuristic, centered around human's relationships with Artificial Intelligence and robots, providing a futuristic image of how Artificial Intelligence can be both a boon and bane for society through its funny and heartwarming episodes. Therefore, the paper adopts multimodal discourse analysis for reviewing certain episodes that have the futuristic gadgets mirroring today's Artificial Intelligence by grouping the gadgets to technological themes.

Keywords: Doraemon, Fujiko Fujio, Robotics, Artificial Intelligence, Human-Machine Interaction, Artificial Intelligence, Japan

1. Introduction

1.1. What is Artificial Intelligence?

Artificial Intelligence is how a computer or a machine can mimic human intelligence, and do cognitive tasks like learning, reasoning, and problem-solving. The term 'artificial intelligence' was first coined by the American scientist, John McCarthy in 1955 at a conference in Dartmouth College. Unlike other computer systems that follow pre-written instructions, it analyses large amounts of data to make predictions, and to find patterns, and is capable of learning, reasoning, problem solving, perception, and language.

Today Artificial Intelligence has been incorporated in several sectors, including healthcare for medical imaging, predictive diagnosis, and drug discovery, in finance for fraud detection, and algorithmic trading, in transportation for autonomous driving, in e-commerce for providing personalised shopping, in media for content creation, and in education for automated grading.

1.2. An Overview of Generative AI and Agentic AI

1.2.1. Generative AI

Generative Artificial Intelligence is a type of AI that creates new content, mostly multimedia content like text, images, video, and code based on the users' prompts, unlike traditional AI that just analyses and predicts data. Some of the examples of Generative AI are chatbots like ChatGPT, Gemini, and Claude, that trains on fed data of billions of pages of multimedia content, where it recognises the patterns, only to deliver the desired and personalised content based on the users' prompts.

Most of the Generative AI models are based on the architecture called the Transformer, which enables the AI to look at the relationship of every word in a sentence, and they are also called Large Language Models (LLM) because they can read, understand, summarise and generate human text. Sometimes these image and video-generation models are also called Diffusion Models, as it adds 'noise' and learns to reverse it and generate new data.

1.2.2. Agentic AI

Agentic AI are AI systems that can initiate plans independently, undertake decision-making, and execute multi-step workflows with minimal to zero human supervision. Unlike Generative AI systems in the form of AI chatbots like ChatGPT, which act as passive generators by generating any form of multimedia content like images, or video and codes from the users' prompts, Agentic

AI systems plans and acts until the goal is resolved, like for example, when planning a travel itinerary, Generative AI bots may give a pre-planned itinerary from previous data, and the human user has to book his plans manually, while the Agentic AI itself searches the flight timings, databases, browses the suitable accommodations, selects the suitable alternatives based on the users' tastes and preferences, and asks for final confirmation before final payment.

Normally, Agentic AI's core architecture has four primary cognitive components:

- **Autonomous Planning:** The system takes the prompt and breaks it down to sub-tasks
- **APIs and Software Integration:** They connect to external tools: web browsers and databases to perform tasks
- **Memory and Perception:** The AI agent remembers past conversations from short-term memory and long-term memory (Retrieval-Augmented Generation).
- **Reflection and Self-Correction:** If any error occurs, the agent recognises the failure, changes its strategy and provides an alternative path.

Due to its versatility and high planning and execution skills, it is used in various sectors as follows:

- **Software Engineering:** Some agents are making strides in the IT sector, where agents like Devin, GitHub write code fixes, clone codes, and issue tickets, and some IT agents analyse system errors, and re-route server traffic, before human activity.
- **Healthcare:** Agentic AI helps in the routine paperwork of patients regarding their medical history and insurance, and also helps in its submission, thus reducing the approval time.
- **Financial Services:** Agentic AI systems help in extracting data from unstructured invoices, and match them with purchase orders, and also help in initiating payments. They also help in KYC and fraud investigation, by collecting data from public archives, news sources, to detect fraudulent and money-laundering operations.
- **Customer Support:** They act as a full-time virtual assistant, by searching suitable options, accessing customer databases, helping with refunds, and managing the overall correspondence.
- **Logistics:** The system helps in rerouting transportation and shipments based on the weather conditions, real-time happenings around the route and also helps in updating and monitoring the inventory levels.

1.3. History of Japanese Anime-Doraemon

Doraemon, is a blue-colored earless robotic cat which has time-travelled from the 22nd century to 20th century Japan, to assist a 10 year old school boy called Nobita Nobi, who is an honest boy, but lacks in studies and sports, and is constantly bullied by his schoolmates, Gian and Suneo, but has a crush on a kind-hearted girl called Shizuka. Doraemon has a four-dimensional pocket, which has innovative inventions, tools, and gadgets, that help in assisting Nobita in his studies and personal life and the chaos that follows its misuse.

Originally developed as a manga series (comics or graphic novels) by writing duo, Fujiko-Fujio in 1969, it was later developed into an anime series, telecasted by TV Asahi, and was later streamed across the world by Disney. The series gained widespread popularity not only in Japan, but also around the world, where the titular character, Doraemon was considered the cultural icon of Japan and was named as the country's first 'anime ambassador' by the country's foreign ministry. The word Doraemon, known in Japanese as 'stray', was derived from a mixture of two Japanese scripts-Hiragana and Katakana, and the story is centered around a fictional neighbourhood in Tokyo.

According to the manga artist, Fujio, he wished a machine would give him ideas, and saw some cats fighting, which gave him the idea to develop the character Doraemon. The series centered around everyday Japanese society and the children's lives, showing values of integrity, courage, and respect, and the artists introduced over 1,293 gadgets in their illustrations, with most popular being the 'Take-Copter', 'Anywhere Door','Time-Kerchief','Designer', and many more, to inculcate the futuristic vision of how technologically-advanced 22nd century would like and to provide a positive view of technology to children.

2. Review of Literature

From the 20th century, Artificial Intelligence has been the center of attention, which started off as an academic concept, and development of a chatbot called ELIZA, and caught public attention, when IBM's Deep Blue machine beat Garry Kasparov in 1997. However it became popular for consumer use, when OpenAI launched ChatGPT in late 2022, which is a Generative AI chatbot that understands human language and generates multimedia content and holds conversations with humans, studied by researcher, ***Fiona Fui-Hoon Nah et al. (2023),*** who stated that it has even passed the Turing Test, and has offered general guidelines and suggestions for a robust human-AI collaboration. Then comes the Agentic AI, built upon Generative AI, is an autonomous agent that can take multi-step actions with zero to little human supervision and undertakes a proactive

approach, with maintenance of short and long-term memory. To address the distinction between Generative AI and Agentic AI, researcher Johannes ***Schneider (2025)*** a comparative survey was conducted by using existing literature, and how Agentic AI surpasses Generative AI and discussed its aspects, recent developments and practical concerns. With these AI models present in society, researcher ***Hoshino. J (2026),*** analysed the co-existence of Artificial Intelligence and humans, and their relationship, by conducting a qualitative cultural narrative analysis where six narrative types were identified-Tools, Helpers, Caregivers, Partners, Seekers, and Transcenders.

Unlike western culture which sees robots and artificial intelligence as a threat to humanity, Japanese culture sees them as trusted companions, as it was part of their religious identity-Shintoism, where spiritual entities are present in all organisms-both living and non-living. Also, the aftermath of World War II loss fueled a sense of urbanisation and embracement of technology as a form of patriotism for post-war recovery, which was reflected in the country's media like in anime and manga (comics), reviewed by the researcher, ***J. Matthews (2005),*** who stated that how anime and manga, especially how children series like Astro Boy and Mobile Suit Kundam, help in shaping the social acceptance of robots, by conducting a comparative analysis of how Western story arcs often shift to the technology acting against its creator or humanity, while Japanese media treats them as companions. Similarly, another researcher, ***Wijaya, S. (2022)*** studies how Artificial Intelligence is portrayed across Japanese visual novels across different timelines, of how the narrative shifts from showcasing AI as cold computers to human-like entities and also examines the relationship between humans and AI characters.

3. Statement of the Problem

Doraemon, being an anime mostly aired for children, the illustrators always had a futuristic notion on human-machine communication and their relationship as a mentor-mentee and a ray of guidance, unlike Western media, which shows human-machine communication in a negative light, wherein technology can replace humans, instead of aiding them. With the advent of Generative and Agentic AI, and humans' reliance on such chatbots and its overall impact, Doraemon anime can be a lesson on the pros and cons of dependence on technological marvels and the storyline's similarities with today's AI models and its impact.

4. Theoretical Framework

The research paper takes into account Ronald Barthes' Semiotics Theory, where a sign consists of signifier (physical form of a sign) and signified (idea attached to the physical form), where it is divided into three types: denotation (literal meaning), connotation (perceived meaning) and myth by analysing the episodes that have gadgets mirroring today's Generative and Agentic AI, by grouping them into technological themes.

5. Research Methodology

The research paper adopts the qualitative research methodology approach, by adopting the Multimodal Discourse Analysis, which is a research method on how people perceive meaning through combination of words, sounds, gestures, and images and how they work together to enforce meaning, and also adopts Ronald Barthes' Visual Semiotic Theory for denotation and connotation of the collected secondary data (i.e.) the selected episodes of the Doraemon cartoon.

6. Research Gap

After analysing the available national and international journals, it was discovered only some international journals studied the mirroring relationship between the episodes' gadgets and the AI models' features, and no national journal has covered the same.

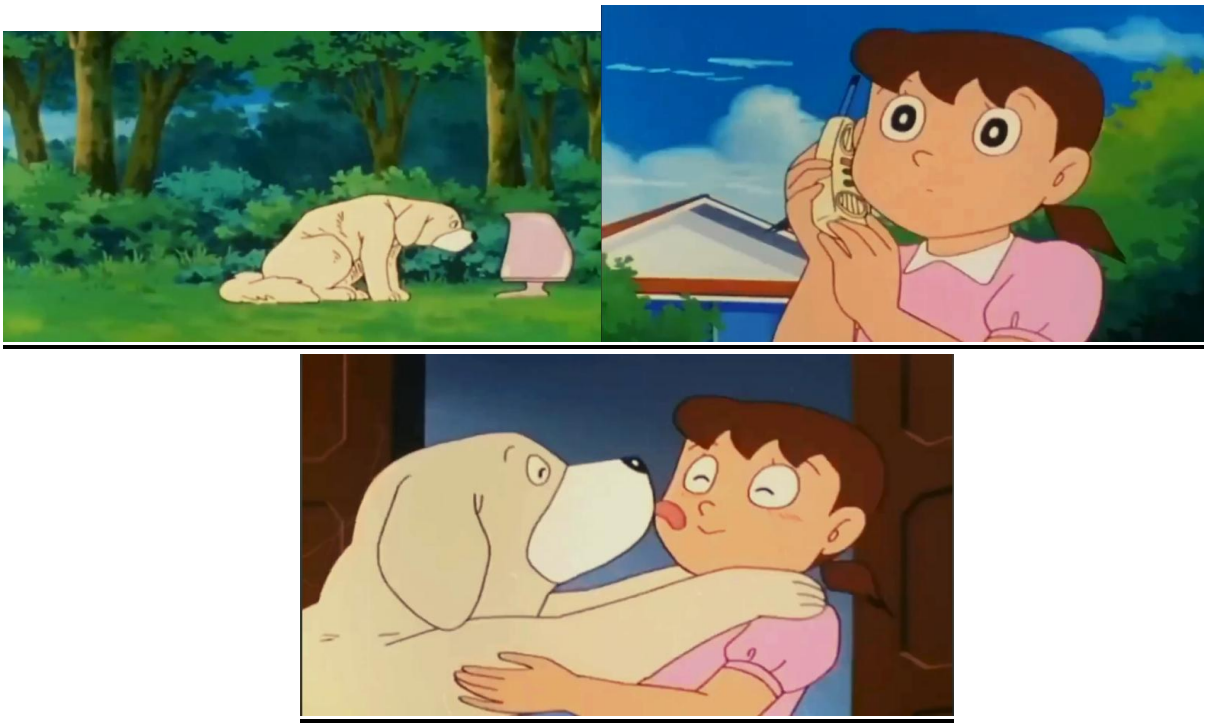
7. Research Objectives

1. To study the representation of the gadgets of Doraemon through visual, verbal, auditory, and narrative modes.
2. To review the impact of these gadgets to the characters' arcs in the different storylines.
3. To analyse the mirroring similarities of Doraemon, and its gadgets with today's artificial intelligence's features.

8. Analysis and Interpretation

8.1. Technology As An Intelligent Assistant

8.1.1. Language Translation Phone



(Source: YouTube)

Denotation: A dog talks into a device to which Shizuka listens to it via a phone and the dog later licks Shizuka on the face.

Connotation: The episode was aired in the late 80s and 90s where 2D animation was mostly used. The first frame is placed in a full-shot format, where a fawn-colored dog is seen talking to a device where one of the protagonists and the main protagonist's love interest-Shizuka is seen talking and understanding the dog's predicament of finding its lost owner who is one of Shizuka's friends-Suneo and the last frame depicts a happy mood where the dog is seen thanking Shizuka for her help as she understood its problem.

Discourse: Doraemon, the 22nd century robot cat, who time-traveled back to the 20th century to help Nobita Nobi is an epitome of Artificial Intelligence itself, as it embodies the characteristics of an advanced artificial machine, mimicking human intelligence and motor ability resembles Agentic AI itself, where it identified a problem of humans not understanding the language of animals, and hence gave an intelligent assistant tool of enabling real-time translation machine. This device gives us similarities with AI translation apps, for instance, Google Translate, which uses artificial intelligence to provide real-time text, voice, and image translations.

8.1.2. Memory Bread



(Source: YouTube)

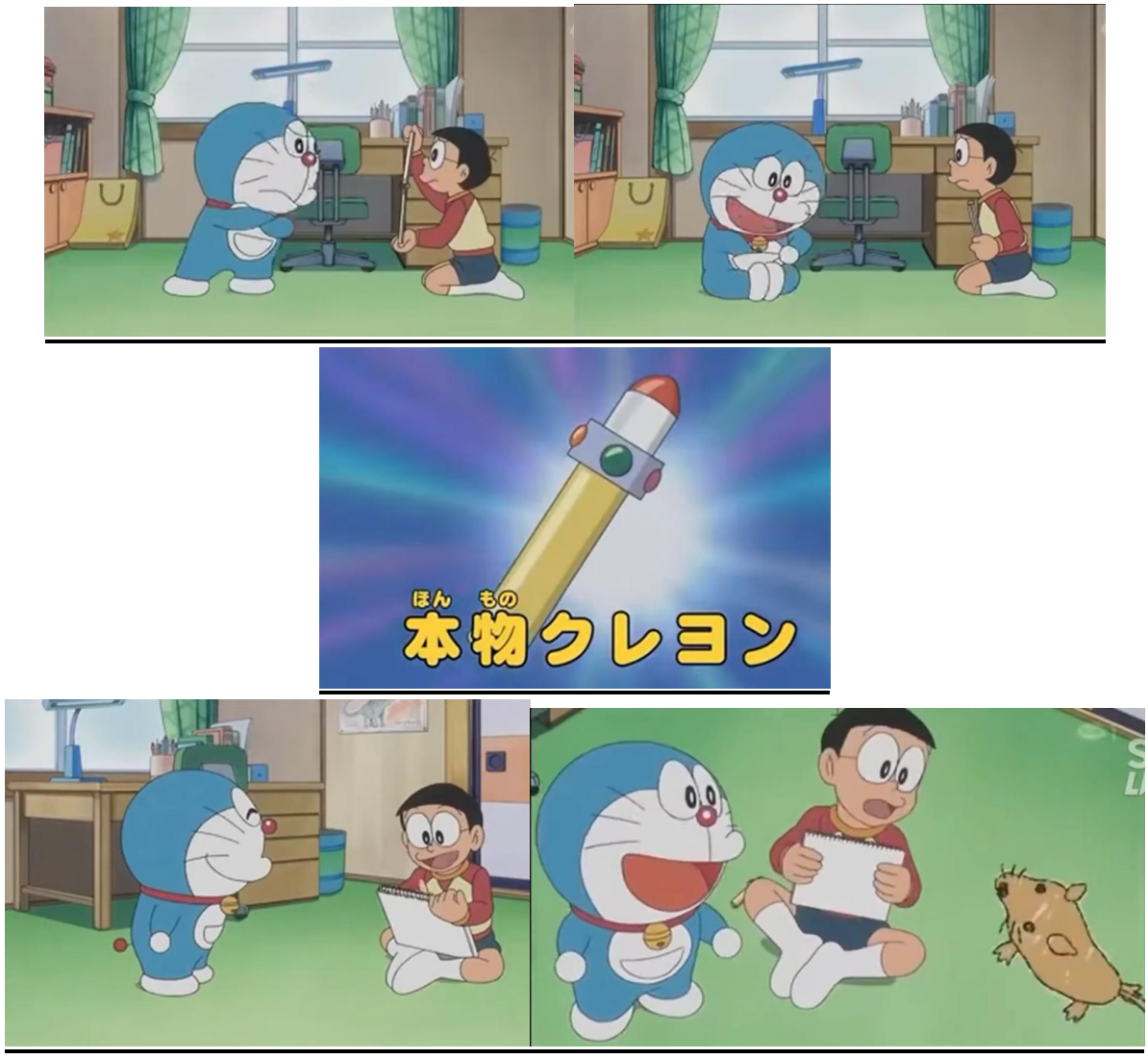
Denotation: Doraemon captures the written ink on a notebook onto a bread and Nobita eats it.

Connotation: This episode also suggests early versions of the anime being aired as the colours look subdued and the mise en scene resembles a middle-class Japanese home in the late 80s and 90s. The first frame showcases in a close-up shot of a mathematics problem to which Doraemon takes out the device-Memory Bread to embed the homework and makes Nobita to eat it, as in to make him remember the mathematical problems and solutions.

Discourse: Generative AI chatbots like ChatGPT, Claude, and Gemini, have emerged as personal tutors to explain hard concepts and break down complex topics and help in providing answer keys and mock tests for overall practice. One of the features of this Memory Bread and with that of Gen AI is that these chatbots can retain memory and the past preferences of the user to provide a personalized experience. The writer-duo Fujiko Fujio had a telescopic vision while conceptualising a gadget that can aid students with their education and career endeavours.

8.2. Technology As A Generative and Creative Tool

8.2.1. Magic Pencil



(Source: YouTube)

Denotation: Nobita shows his book to Doraemon who later gives him a pencil from his 4D pocket to draw an animal which flies out of his book.

Connotation: This episode takes place in Nobita Nobi's room in a full-shot format, where Nobita looks stressed and anxious when showing to the angry Doraemon as Nobita defied Doraemon's orders. Seeing his predicament, Doraemon later takes a device from his unique 4D pocket which contains the futuristic devices. The magic pencil is shown as the most important element in the second frame with bold letters in Japanese language and illuminating background to highlight the device the most. In the next scene, Nobita draws using the pencil an animal, which immediately

comes into life, due to the pencil's properties, surprising Nobita, where Doraemon looks at it with an all-knowing expression.

Discourse: In this episode, Nobita performs miserably in a drawing session in school, as he is not a good artist, who later takes the help of the magic pencil to make beautiful illustrations, which later comes back to life. The magic pencil invention resembles that of Generative AI's image generation, editing, and even style transfer of famous artists and painters, based on the users' prompts. Some examples include DALL-E, Midjourney, Google Omni, and more, which generates complex images, and even videos, due to its learning of fed data and generates content based on users' prompts. This device-magic pencil makes Nobita to draw good illustrations, despite him being a bad artist, thus aiding him.

8.2.2.Dress-Up Camera



(Source: YouTube)

Denotation: Doraemon captures one by one all kids' images and gives them beachwear.

Connotation: This scene happens in a beach area, where the kids-Nobita, Gian, Suneo, and Shizuka are in need of beach clothes to enter the sea, but don't have it. Hence, Doraemon, takes out a device called 'Dress-Up Camera' from his pocket, which is shown in a medium-shot format where a drawn paper with trousers is being placed into the camera, which in turn, gives the required clothes when focused on a particular person, which is shown in full-shot format.

Discourse: This gadget's features have similarities to shopping sites' AI models of virtual try-on, which uses computer vision, deep learning, and Generative AI by detecting our photo or live video of our face or body to place the chosen clothes and accessories. This gadget also has similarities

to that of 'Augmented Reality (AR)', as the users' device camera tracks their face and body to place the objects.

9. Recommendations and Conclusion

While Doraemon's devices are being considered for this study, it is worth mentioning that Doraemon, himself (as the robot identifies as a male cat) is an outstanding example of Agentic AI and its capabilities, as advanced AI agents employs a concept called 'tool use', where the agent decides which software or API to execute the work, when given a high-level goal. Also, the Agentic AI uses reasoning loops to observe, think, take action, obtain feedback, and adapt new solutions regarding a problem, and can also retain both short-term and long-term memory to facilitate work easily.

This has similarities with Doraemon, which understands Nobita's problem, and provides the required gadgets and pivots when things go awry, which was predicted by the manga writer-duo in the 20th century itself, and was reiterated by IBM CEO Arvind Krishna that autonomous agents don't assist anymore, but take action, with minimal to zero human insight, and a recent launch by OpenAI of GPT-6 Astra depicts the future of how the AI model can navigate computers without human effort, and can order food, develop video games, and execute multi-step workflows. However, the future can only determine whether these AI models will serve as a boon or bane to humanity, as every new technology developed, right from the telegram, and radio had its own benefits and dangers.

Thus, it is concluded that Doraemon, despite being a children's anime, has the capability to educate the younger generations about human-machine communication and a more technologically-inclusive world.

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