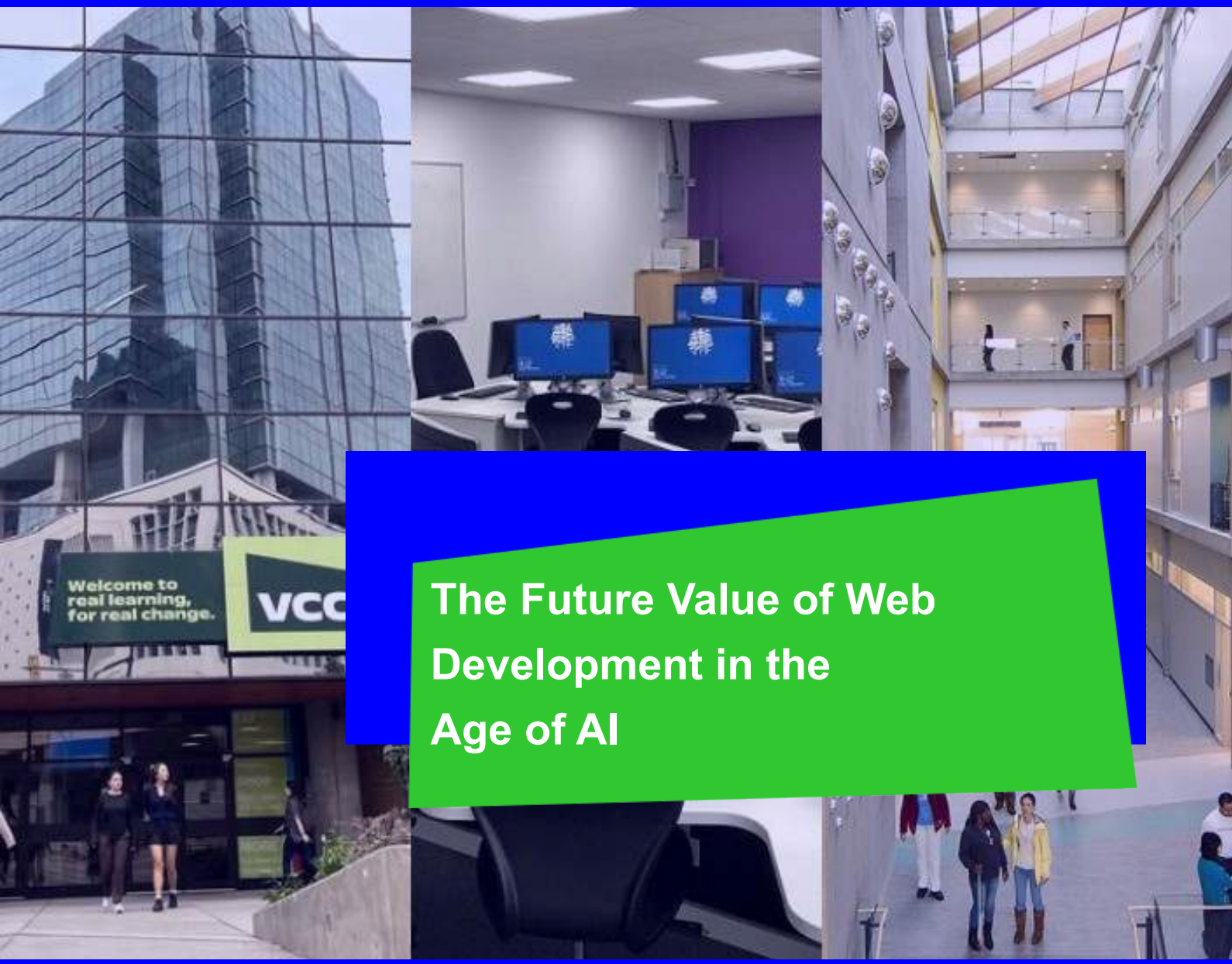
3250: Instructional Strategies
Motivation Report

Instruct



The Future Value of Web Development in the Age of AI

Author: Yuri Tricys
Date: May 05th, 2025

Introduction

Expectancy-value theory, introduced by John William Atkinson in the 1950s and 1960s (wikipedia), can help teachers create conditions in classrooms that enhance student motivation.

According to the theory, people are most motivated to engage in activities when they both expect to succeed and value the outcome highly.

In Chapter 5 of “Student Engagement Techniques”, Barkley and Major provide motivational strategies teachers can use to motivate students to engage. Tip number 7 of the 13 tips provided, ‘teach things worth teaching’, is central to the theme of this paper.

I selected it because of the wide debate in the computer sciences community (among other communities) around the impacts of AI on the expected future value of skilled knowledge workers, including software engineers and web developers.

The AI Challenge to Web Development

On the one hand people like Mark Zuckerberg, who suggested on The Joe Rogan Experience that Facebook will “have an AI that can effectively be a sort of midlevel engineer” by the end of 2025, seem to believe that AI will eventually replace humans in software development roles. (Futurism, January 2025, Para 2)

> *"In the beginning it'll be really expensive to run, and you can get it to be more efficient," the Meta CEO said. "And over time it'll get to the point where a lot of the code in our apps and including the AI that we generate is actually going to be built by AI engineers instead of people engineers." ~ Mark Zuckerberg*
>
> *(Futurism, January 2025, Para 3)*

On the other hand, a recent arXiv paper challenges the replacement narrative:

> *"Artificial Intelligence (AI) technology such as Large Language Models (LLMs) have become extremely popular in creating code. This has led to the conjecture that future software jobs will be exclusively conducted by LLMs, and the software industry will cease to exist. But software engineering is much more than producing code -- notably, maintaining large software and keeping it reliable is a major part of software engineering, which LLMs are not yet capable of."*
>
> *(Roychoudhury & Zeller, 2025, para 1)*

Given the uncertainty in the industry, motivating students with assurances of the future value of a career in web development is more important that ever, especially if you believe as I do that web development roles will change in the future but human web developers will still be in demand.

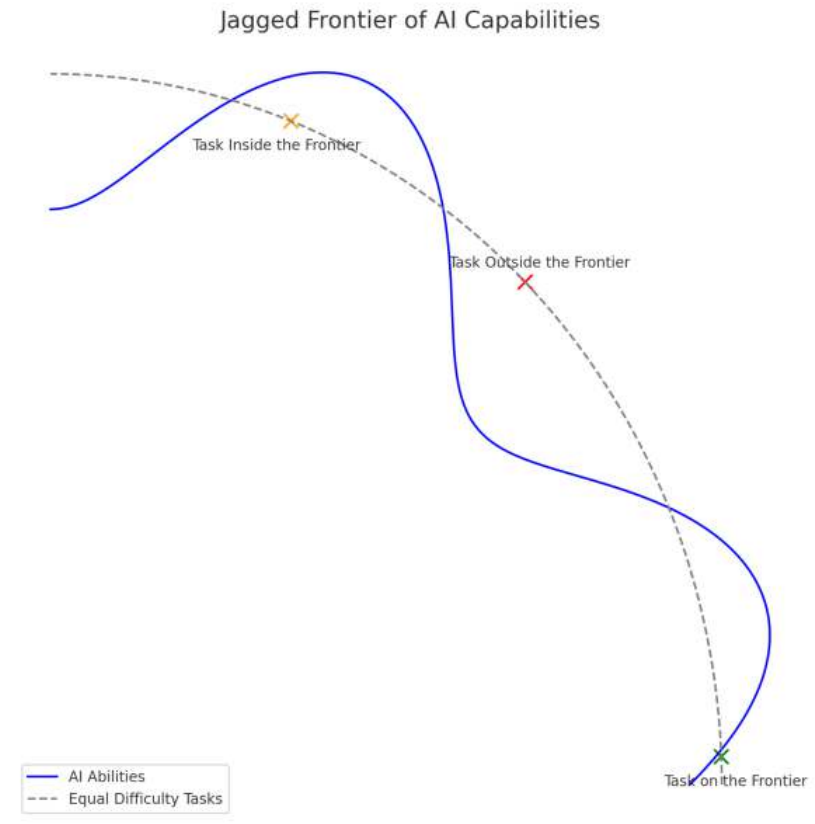
Firstly, human innovation drives technology advancement, which results in continuous evolution across knowledge domains. New knowledge must be integrated into both software systems and AI. With this in mind, organizations will always need human judgment, inference, and nuance, and that inference will have to be educated at a deep enough level to effectively guide the adaptation of changing human and software networks to shifting user needs and preferences.

Last Year's AI, Next Years Technology

If you accept that new technology cannot be utilized by AI without human managed training and fine-tuning, you might accept also the idea of a 'frontier gap', a distance between cutting edge innovation and the larger global body of knowledge capital.

A working paper from Harvard Business school, entitled "Navigating the Jagged Technological Frontier: Field Experimental Evidence of the Effects of AI on Knowledge Worker Productivity and Quality" demonstrated that when tasks fall outside the AI capability frontier, "consultants using AI were 19 percentage points less likely to produce correct solutions compared to those without AI" (Dell'Acqua et al., 2023).

Their paper convincingly underscores the irreplaceable nature of human nuance and judgment in organizational contexts, particularly when navigating complex ambiguous scenarios that defy algorithmic resolution.



Notes: This figure displays the AI frontier as jagged. Tasks with the same perceived difficulty may be on one side or the other of the frontier. ChatGPT produced this image starting from the authors' prompts.

(Dell'Acqua et al., 2023, pg 27)

Fashionable Software And the Need for Human Inference

Another factor supporting strong future demand for human web developers, web designers, and software developers is called human-centric application design.

Lemon web solutions describes human-centric application design as development that “focuses on creating apps and websites that are intuitive and user-friendly for a wide range of individuals” (Lemon Web Design, January 2025, Para 1). They point out that human-centric design is more rare than one might expect.

> *While data indicates that most organizations have only reached a basic or average level of maturity in human-centric design, 57% of respondents believe they fully apply design-thinking principles in their frameworks. This highlights a pressing need for greater self-awareness and comprehensive internal benchmarking to accurately assess and improve their human-centric design capabilities.*
>
> *(Lemon Web Design, January 2025, Para 6.)*

The problem of human-centric design is really a problem of human inference. It’s about understanding the preferences of others, and that is something that is very hard to do effectively on a large scale. When organizations get it right, as one could argue the Apple organization did, they go futher than they would have without it.

It is challenging to percieve any AI that could infer fast changing human wants and needs when not even we humans are good at it.

Preference and wants are fleeting, they go viral and influence massive social change. They’re also expressed in human ways, which cannot be predicted consistently by humans or AI. While AI may serve web developers of the future well in aggregating and infering preferences through data collection, dating sorting, and presentation, it’s unlikely to replace humans at tasks that are at their core inherently human.

Human-centric design is yet another reason web developers of the future can rest assured their skills, though changing in nature, will continue to be in demand.

Conclusion

In conclusion, the Expectancy Value Theory posits that motivation is enhanced when individuals expect to succeed and value the outcome. In the context of web development, despite AI’s growing capabilities, human skills, like learning new technologies, training AI to use them, and infering and then applying them to changing human preferences through human-centric design remain critical, and will continue to remain critical in the future.

Educators can leverage this by illustrating the importance of human inference in tasks such as human-centric design, thus motivating students by highlighting the future value of their skills.

References

Dell’Acqua, F., McFowland, E., Mollick, E., Lifshitz-Assaf, H., Kellogg, K. C., Rajendran, S., Krayer, L., Candelon, F., & Lakhani, K. R. (2023). Navigating the Jagged Technological Frontier: Field Experimental Evidence of the Effects of AI on Knowledge Worker Productivity and Quality. Harvard Business School.

Landymore, F. (2025, January 13). Zuckerberg Announces Plans to Automate Facebook Coding Jobs With AI. Futurism. https://futurism.com/the-byte/zuckerberg-automate-coding-ai

Lemon Web Design. (2025, January 14). Achieving effective software development centered around human needs. https://www.lemon-web.net/lemon-blog/application-development/achieving-effective-software-development-

centered-around-human-needs

Roychoudhury, A., & Zeller, A. (2025). Will AI replace Software Engineers? Do not hold your breath. ArXiv. https://doi.org/10.48550/arXiv.2502.20429

AI Models

The ideas, structure, and editing in this paper were performed by the author. Various AI models were used in collecting data, verifying data, and formatting various arguments.

AI models used:

- LLama 4 Maverick
- LLaMA 2 LLM Chatbot
- GPT 4.1 Nano