

# Supporting User's Cognitive Ability as the Key Agenda in Multimodal LLM/GenAI R&D

Hyowon Lee  
School of Computing  
Insight Centre for Data Analytics  
Dublin City University  
Glasnevin, Dublin 9, Ireland  
hyowon.lee@dcu.ie

## Abstract

While Multimodal LLM and Generative AI are drawing much attention due to its immense potential for transforming every aspect of our lives, the characteristics of the technology and its promises almost always imply reduced cognitive efforts by its end users. This can be compared to our not-so-smart but still very powerful and convenient day-to-day technologies we are used to today, afforded by ever-improving computational power, availability of smartphones and the internet: our phone apps and web services are efficient, accurate and convenient, helping us save our mental efforts (e.g. memorising, calculating, summarising, reflecting, etc.).

There are growing amount of scientific evidences on how the prolonged use of and reliance to these apps and services undermines our natural cognitive abilities - because almost by definition these tools are there to help their users bypass the cognitive efforts - and the Human-Computer Interaction (HCI) and UI/UX communities are starting to address this to amend and extend the design knowledge (principles, usability guidelines, heuristics, etc.) to take this into account. Is it possible to re-design our apps and services in such a way as to keep our cognitive abilities active while at the same time help us achieve the tasks that those tools were designed for in the first place?

This talk will point out how our future applications of Multimodal LLM and GenAI will have similar impact to people's cognitions as the conventional apps and services have done so far, and what our stance as the researchers in the field could or should be to minimise such negative consequences. This has implications to

Permission to make digital or hard copies of all or part of this work for personal or classroom use is granted without fee provided that copies are not made or distributed for profit or commercial advantage and that copies bear this notice and the full citation on the first page. Copyrights for components of this work owned by others than the author(s) must be honored. Abstracting with credit is permitted. To copy otherwise, or republish, to post on servers or to redistribute to lists, requires prior specific permission and/or a fee. Request permissions from [Permissions@acm.org](mailto:Permissions@acm.org).

MA-LLM '25, October 27-31, 2025, Dublin, Ireland.

© 2025 Copyright is held by the owner/author(s). Publication rights licensed to ACM.

ACM ISBN 979-8-4007-2035-2/2025/10.

<https://doi.org/10.1145/3746263.3757712>

the agenda for research directions for those studying and developing Multimodal LLM and other Generative AI technologies.

## CCS Concepts

• **Human-centered computing** ~ Human computer interaction (HCI) • **Human-centered computing** ~ Human computer interaction (HCI) ~ HCI design and evaluation methods • **Computing methodologies** ~ Artificial intelligence.

## Keywords

Interaction design, Usability, Cognitive impact, Over-reliance to technology, Generative AI, Multimodal LLM.

## ACM Reference format:

Hyowon Lee. 2025. Supporting User's Cognitive Ability as the Key Agenda in Multimodal LLM/GenAI R&D. In *Proceedings of the 33rd ACM International Conference on Multimedia (MM '25)*, October 27-31, 2025, Dublin, Ireland. ACM, New York, NY, USA, 1 page. <https://doi.org/10.1145/3746263.3757712>

## Biography

Hyowon Lee is an Assistant Professor at Dublin City University. His expertise is broadly in the field of Human-Computer Interaction, more specifically interaction design and usability for interactive applications to support novel usage scenarios afforded by various experimental computational technologies. He leverages practical interaction design knowhow and experience to create new interaction strategies while addressing the need for modifying/extending the existing body of design knowledge.

## Acknowledgements

This work is partly supported by Taighde Éireann - Research Ireland under Grant Number 12/RC/2289\_P2 (Insight Centre for Data Analytics), co-funded by the European Regional Development Fund.