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Editorial
Sanjram Premjit Khanganba

**Eye Tracking and
Visual HFE**

Understanding where we look and how our eyes move offers a powerful window into how we make sense of the world around us. For Human Factors and Ergonomics (HFE) researchers, eye-tracking provides valuable objective insights into visual cognition and how people interact with systems, environments, and information. Eye tracking enables researchers measure an individual’s point of gaze and patterns of eye movement. Visual HFE researchers use eye-tracking technology to understand not only where people look, but also how their visual attention unfolds thus revealing aspects of cognitive processing that may otherwise remain difficult to observe.

Modern eye-tracking systems allow researchers to capture and analyze precise physiological signals (including fixations, saccades, blinks, pupillometry among others) from the human eye. With the rapid advancement of virtual reality (VR) technology, VR headsets that include built-in eye tracking capability expand the possibilities of scientific investigations. These VR headsets use internal cameras to monitor where users look. It is good to see that researchers are working on enhancing user experience applications, such as improving rendering performance through dynamic foveated rendering, enabling hands-free menu navigation, enhancing social avatars with naturalistic blinking and gaze expressions, and automatically adjusting lens spacing to improve visual clarity.

The optimism around eye tracking stems from its expanding applications across human-computer interaction, healthcare, mobility, immersive technologies, and beyond. However, its real-world value depends not merely on accurately capturing point-of-gaze and eye-movement patterns, but on interpreting these metrics meaningfully and translating them into reliable insights about human behavior, cognition, and experience across diverse contexts and applications.

Chasing Where the Gaze Goes

Manish S.

Distracted by Design: A Journey into Attention Research

I have always found it curious that the eye, a restless organ, is asked to do the impossible: see everything, and show us only what matters. Long before I began tracking eye movements on a chessboard, I was tracking something else: the ways people notice, ignore, and get pulled apart by the world around them. That thread has run through every version of myself I have been so far; a student, a practitioner, an educator, and now as a researcher at the Human Factors and Advanced Cognition (HFAC) Lab, Centre for Interdisciplinary Studies, Indian Institute of Technology Indore (IIT Indore).

As a student, I was more interested in shaking the furniture than sitting on it. Psychology, to me, felt like a discipline full of settled answers waiting to be unsettled. I organized social experiments, informal movements, and late-night discussions that had no syllabus and no marks attached, nothing but the itch to see whether a “fundamental” was actually fundamental, or just familiar. Looking back, I think that itch was an early, unrefined form of what I now call attentional curiosity: a refusal to let the obvious go unexamined.

As a practitioner, the questions got heavier and more human. I sat with individuals navigating technology-based dependencies - people whose attention had been captured, monetized, and rerouted so gradually that they barely noticed the leash. I watched the ripple effects spread outward: into families who felt like they were competing with a screen for a loved one’s eyes, into friendships thinned out by notifications, into a broader social fabric quietly reorganizing itself around what captures gaze rather than what deserves it. That work taught me that attention is not just a cognitive resource. It is a relational one. Where we look is, in a very real sense, where we live.

As an educator, my students returned the favor tenfold. Every class was a small laboratory of perspectives and debates I hadn’t anticipated, thought experiments that punctured our own assumptions, and the simple, renewable joy of watching someone’s face change when an idea finally clicked. Teaching reminded me that learning, at its best, is not passive absorption but active engagement—the mind selecting, prioritizing, and constructing meaning out of a noisy environment. That, too, is attention at work. And now, as a researcher, all three of those selves have converged into a single question, one I find endlessly generative: what makes information easy or hard to engage with? I carve this phenomenon - Attentional Accessibility: the ease with which relevant information facilitates selective engagement and successful task execution. It sounds abstract until you watch it play out in a real task, a person scanning a screen, a surgeon tracking a bleed, a driver reading a junction, where their engagement sharpens or scatters depending on how the environment is arranged.



This is where chess enters the story, not as a game, but as a pliable tool to test the mechanism of the mind. A chessboard is a beautifully controlled microcosm of visual search: a bounded space, discrete pieces, clear rules, and crucially a rich literature distinguishing players in how they scan and encode positions. Using eye-tracking technology, we can watch cognition unfold in real time: where the gaze lands, how long it lingers, how efficiently it moves from the periphery to the target. We manipulate the visual field around a critical decision point sometimes leaving it clean, sometimes seeding it with distractors that compete for attention, sometimes placing outright obstacles that block or complicate the scan-path. Three conditions, one deceptively simple question: how does the shape of the visual environment change what the mind can do with it?

The findings, unsurprisingly to anyone who has ever tried to read an important email while a notification banner slides across the screen, are not subtle. Distractors pull gaze away from targets and cost time. Obstacles force compensatory strategies; the eyes work harder, search paths lengthen, confidence wavers. And in the cleanest condition, the one with no impediment at all, something interesting happens: performance doesn't just improve, it stabilizes. The visual system, freed from competition, seems to breathe. The more challenging conditions reveal differences in how players allocate and regulate visual attention. It turns out that expertise lies largely in the ability to remain calm, selective, and goal-directed when the environment refuses to cooperate.

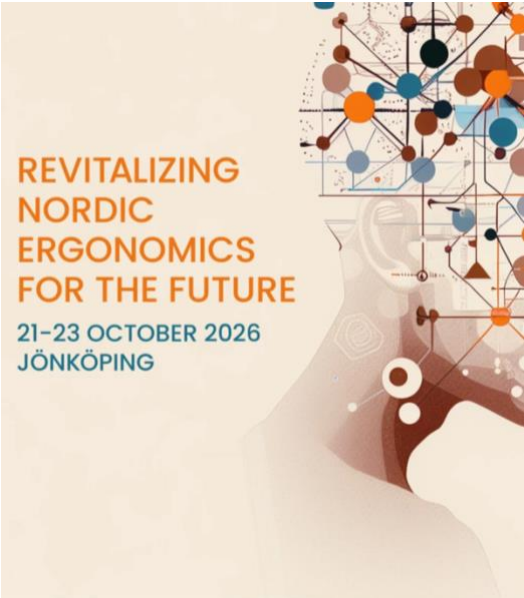
What excites me about this line of work is that it refuses to stay confined to a chessboard. The same architecture of target, distractor, and obstacle plays out in AI interfaces cluttered with suggestions, in advertisements engineered to hijack a half-second of gaze, in warning labels that either save a life or vanish into visual noise. If we can characterise how the human visual- attentional system negotiates interference in a controlled setting, we gain a vocabulary and eventually a design toolkit for building environments, digital and physical, that work with human cognition rather than against it. That, to me, is the quiet promise of experimental psychology: not just describing the mind, but eventually designing better rooms for it to live in.

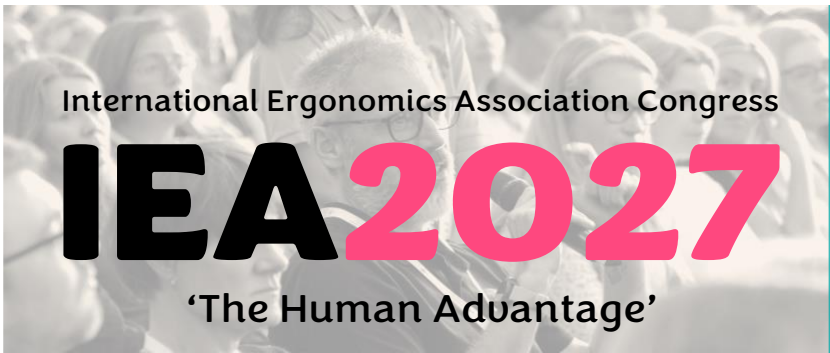
There is something almost poetic about spending a career studying what pulls attention away, while trying very hard to hold onto my own. Every unfinished draft left open in another tab, every hour spent deciding whether a manuscript belongs in an ACM venue or a Nature Portfolio journal, every late night with an eye-tracker that refuses to calibrate these are, technically speaking, distractors and obstacles in my own visual field. I suppose the irony isn't lost on me: I have built an entire research program around the indices to quantify attention, and yet I still can't resist checking my phone mid-analysis.

Perhaps that's the real lesson hiding inside all this data. We don't study attention because we've mastered it. We study it because we haven't and because somewhere between the pupil and the prefrontal cortex, there's a story about being human that's still being written, one saccade at a time.



Upcoming Events





Progress starts with people

As industries race toward AI-driven, data-led and system-heavy futures, there's a growing risk of losing sight of what progress is actually for. The organisations that succeed are those that deliberately design around human needs, judgement and experience, because systems built without empathy ultimately fail the people they're meant to serve. The Human Advantage is a call to reclaim intentional, human-led thinking as a strategic strength, not a compromise. Because real progress doesn't start with systems. It starts with people.

Sub-themes

-  **Beyond Automation**
Exploring the future of human work in the age of AI and robots
-  **Inclusive by Design**
Using human factors to enable truly people-centred design
-  **Navigating Complexity**
Understanding system interactions and performance impacts

Submission types

- Research papers**
Extended abstract, 2-3 pages, presented as 15-minute talk or as poster.
- Practitioner case studies**
Applied work, 2-3 pages, presented as 15-minute talk or as poster.
- Workshops**
Human factors tools & techniques, interactive 90-minute session with CPD value.
- PhD research**
Abstract, 1 page, presented as 10-minute talk in dedicated sessions.

At a glance

- CONGRESS DATE**
23-25 August 2027
- VENUE**
Excel London, easy links.
- BOOKINGS**
Open now. Discounts for members, students.
- ACCOMMODATION**
Preferential rates available via dedicated hotel portal.
- SUBMISSIONS OPEN**
1 July 2026
- SUBMISSIONS CLOSE**
1 November 2026
- AUTHORS NOTIFIED BY**
1 February 2027
- FINAL PAPER DEADLINE**
1 April 2027
- WEBSITE**
iea2027.com
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- EXHIBITORS**
Space available from £2500. Book through the website.

 Find out more at **iea2027.com**



Call for Entries

Dear Members,

Do you have something worth sharing? Let us know!

Deadline: 15th of the month prior to publication

The Newsletter of the IEA Visual Ergonomics TC, Visual Ergonomics Digest is published online 3 times a year (April, August, and December).

We welcome your contributions:

- Conference reports
- Seminar / webinar summaries
- Meeting highlights
- Announcements (events, calls for papers)
- Awards & recognitions
- Recent publications
- Job opportunities



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Release of the Next Issue: December 2026

What is Visual Ergonomics?

Visual ergonomics is the multidisciplinary science concerned with understanding human visual processes and the interactions between humans and other elements of a system. Visual ergonomics applies theories, knowledge and methods to the design and assessment of systems, optimizing human well-being and overall system performance. Relevant topics include, among others: the visual environment, such as lighting; visually demanding work and other tasks; visual function and performance; visual comfort and safety; optical corrections and other assistive tools. A description of the how the definition was developed is included in a Letter to the Editor published in *Applied Ergonomics*: "A definition of visual ergonomics", available online 8 April 2014. An easy-to-read article explaining the practical implications of visual ergonomics was developed by this Technical Committee and published in *WORK* (2014): 47: 419-420. <https://doi.org/10.3233/wor-141820>

Dear Members, Do you have any news?

Call for entries closes on the 15th day of the preceding month of the scheduled publication of the newsletter.
If you have any news or announcements for the newsletter, please send the details to us.

Items of interest include but not restricted to: Reports about conferences Reports about seminars Reports about meetings Reports about webinars

If you have attended activities related to visual ergonomics, the newsletter is the right place to highlight your work. Announcements about up-coming conferences related to visual ergonomics, call for papers for journals on the topic of visual ergonomics, details about awards you (or someone else) may have received, articles you have recently published related to visual ergonomics, interesting jobs openings etc. are welcome. If you have photos, accompanying your texts inputs, it is highly appreciated.

The executive board reserves the final decision related to the inclusion of information in the newsletter.

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