IEA International Ergonomics & Human Factors Association

IEA Visual Ergonomics TC

Visual Ergonomics Digest

April 2025

Volume 2025
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Editorial

Sanjram Premjit Khanganba

Visual Environment

Our Workstations

Welcome to the newsletter's introductory issue of this year and let us talk about our workstations. In today's digital age, our workstations have become the primary environment where we engage in prolonged visual tasks. Whether in offices, remote settings, or co-working spaces, the constant interaction with screens places a significant strain on our eyes. The concept of visual load refers to the demands placed on our visual system due to extended screen exposure, improper lighting, and poor workstation design. When not managed properly, excessive visual load can lead to eye strain, fatigue, headaches, and reduced productivity.

Many professionals spend hours focusing on monitors without adequate breaks, leading to digital eye strain. Poor ergonomic design, such as incorrect screen positioning or inadequate contrast, further exacerbates the issue, making it harder for the eyes to focus and adjust.

Excessive brightness or glare from overhead lights, windows, or reflective surfaces forces the eyes to work harder, increasing strain. Conversely, dim lighting can cause discomfort by making it difficult to distinguish text or images on the screen. Proper task lighting and anti-glare filters can help create an optimal visual environment.

Reducing visual load requires a combination of ergonomic adjustments and healthy habits. The 20-20-20 rule—looking away from the screen every 20 minutes at something 20 feet away for 20 seconds—can help relax the eyes. Avoiding prolonged gaze without blinking and using artificial tears can prevent dryness, while maintaining proper posture reduces the risk of musculoskeletal strain, further improving overall comfort. As work environments continue to evolve, prioritizing visual ergonomics is essential for sustaining productivity and well-being. Small adjustments can lead to significant long-term benefits, ensuring that our workstations remain spaces of efficiency rather than strain.

Our computer-based modern workplaces and visual environement

Hillevi Hemphälä

Visual Ergonomics

The Way Forward

As 2025 begins, the International Ergonomics and Human Factors Association (IEA) continues its focus on advancing research and practices in visual ergonomics. This year's first issue of the newsletter marks a transition, with new officials joining the executive board of the IEA's Visual Ergonomics Technical Committee. With fresh leadership and support from past officials, the committee aims to raise awareness, foster innovation, and promote practices that enhance visual comfort, efficiency, and well-being. Through collaboration and knowledge-sharing, the committee works to address emerging challenges in visual ergonomics, particularly in a world that is becoming increasingly digital. The rise of remote work, online learning, and AI-driven technologies has led to more screen time, which can contribute to digital eye strain, fatigue, and discomfort. Addressing these issues requires a thoughtful approach, integrating research-driven solutions into workplace design, education, and public health strategies.

The committee is expanding its global reach and encouraging interdisciplinary collaboration to explore possible solutions. One of the key initiatives for 2025 is the Global Webinar Series, which will provide a platform for experts and industry leaders to discuss advancements in visual ergonomics. Topics will include lighting optimization, reducing digital eye strain, display technology innovations, and ergonomic interventions for work and learning environments. The webinars will offer professionals practical insights into implementing visual ergonomics solutions. Additionally, the committee is working to strengthen connections with policymakers, educators, and technology developers to promote user-centered design focused on visual health. Through research, best practices, and ongoing collaboration, the IEA Visual Ergonomics Technical Committee continues its efforts to improve visual comfort, efficiency, and well-being in today's digital landscape.

New Member Update

Technical Committee Executive Board

Sanjram Premjit Khanganba, Ph.D.

Email: cmontalvao@puc-rio.br

Chair, Focused Research Group in Human Factors
Human Factors & Applied Cognition Lab
Indian Institute of Technology Indore
Profile: https://people.iiti.ac.in/~sanjrampk/index.html

Sanjram Premjit Khanganba works as a human factors research practitioner. He has worked in the industry prior to full-time engagement in academic research. He currently holds an academic position as a Professor and is Former Head of School of Humanities and Social Sciences at Indian Institute of Technology Indore. he is a faculty member of– Discipline of Psychology, Department of Biosciences and Biomedical Engineering, Center for Electric Vehicles and Intelligent Transport Systems, and Centre of Futuristic Defense and Space Technologies. His scientific research revolves around investigating aspects of applied cognition in system development, design, and evaluation.

Beatriz Redondo is an Assistant Professor in the Department of Optics at the University of Granada. Her research examines the impact of visual function on performance in experimental and clinical settings, integrating ergonomics and optometry. With 80 peer-reviewed articles (H-index: 18) and leadership in funded projects, her work enhances the understanding of visual performance, dry eye disease, and computer vision syndrome, generating new hypotheses and driving scientific progress. In addition to her research, she teaches Visual Ergonomics, Sports Vision, and Foundations of Optometry at both undergraduate and master's levels, bridging academic knowledge with practical applications to improve visual health and performance.

Beatriz Redondo, Ph.D.

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CLARO Group
University of Granada, Spain
Profile: https://blogs.ugr.es/claro-group

Cláudia Mont'Alvão, Ph.D.

Email: cmontalvao@puc-rio.br

Laboratory of Ergodesign and Usability of Interfaces
PUC-Rio Pontifical Catholic University of Rio de Janeiro
Profile: https://www.unidcom-iade.pt/centre/people/claudia-montalvao/

Claudia is Ph.D. and M.Sc. in Transport Engineering at Universidade Federal do Rio de Janeiro (2001, 1997), graduated in Design from Centro Universitário da Cidade (1994), in Product Design. Cladia is an Associate Professor in the Graduate Program in Design at Pontifical Catholic University of Rio de Janeiro. Her work includes teaching at undergraduate and graduation and research in Human Factors/ Ergonomics and coordination of the Laboratory of Ergodesign and Usability of Interfaces LEUI|PUC-Rio. Since 2002 is an ad hoc consultant for Brazilian Agencies such as CNPq and FAPERJ. Her main interest areas are information design, user experience, usability in HCI, ergonomics in the built environment, and ergonomics in transport systems.

Special Highlights for the Next issue of the Newsletter

An interview with the immediate Past Chair of the IEA VISUAL ERGONOMICS TC

Prof. Menozzi retired as the Chair of the IEA Visual Ergonomics Technical Committee last year, leaving behind a legacy of dedication and expertise. Until the end of 2024, he actively guided the new team, ensuring a smooth transition and continuity in the committee's initiatives. His leadership fostered significant advancements in visual ergonomics, inspiring ongoing research and innovation in the field. He played a crucial role in mentoring and guiding the new team, ensuring a seamless transition and the continuation of key initiatives.

He specializes in human factors engineering, including virtual and augmented reality, and human vision. His scientific work at Eidgenössische Technische Hochschule Zürich's Department of Health Sciences and Technology has been inspiring for many. He established the Human Factors Engineering group at the university in 2002. He worked as a product developer at Essilor in France and Titmus in the US. He also served as the chair of the Consumer Behavior, Ergonomics of Information Media at this university.

It is too numerous to list all his activities and achievements. Some of the selected highlights are listed below.

Member of the technical committee of Work and Vision at the ICOH

International Committee of Occupational Health

Executive committee member of the Ethics committee at ETH Zurich

President of suissepro, the Swiss umbrella association for occupational safety and health

President of SwissErgo, the Swiss Association of Ergonomists

Board member of the German society for work science (GfA)

Vice chair of the TC Visual Ergonomics at the International Ergonomics Association

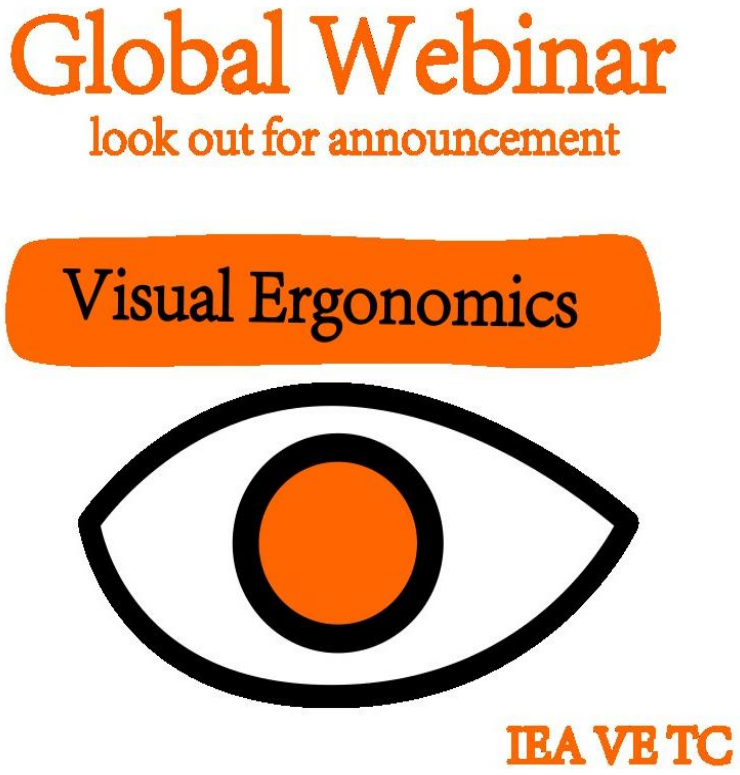
"The insights to get you through the day"

Prof. Marino Menozzi

Our Next Focus

Global Webinar Series

More details will be available in our next issue of the newsletter



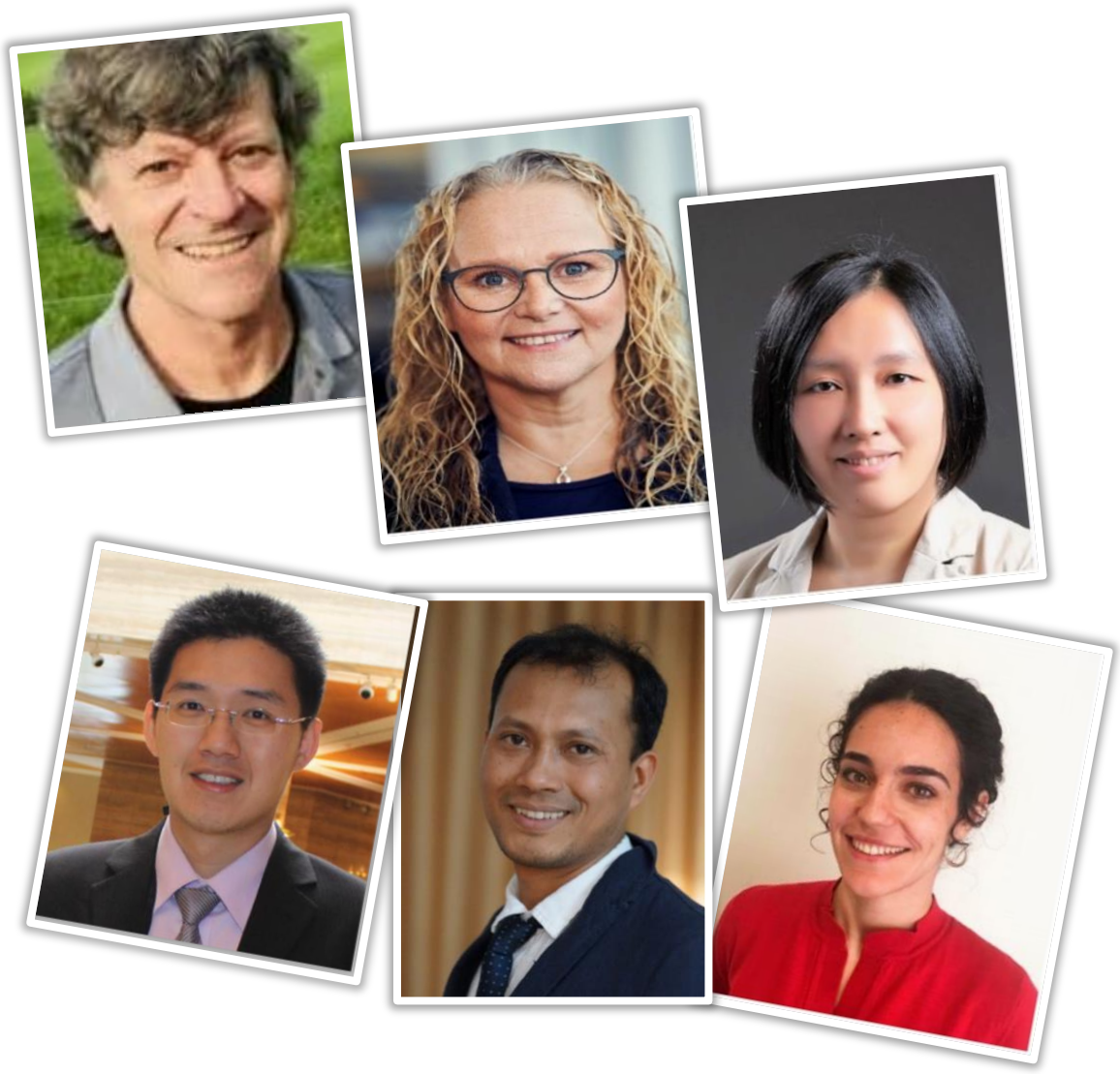
IEA Visual Ergonomics TC conducts webinars in order to promote the field

As part of the global webinar series, the current team of the IEA Visual Ergonomics Technical Committee is actively preparing for this year's highly anticipated sessions, scheduled to take place preferably around October 2025.

These webinars will serve as an essential platform for experts, researchers, industry professionals, and practitioners to come together and engage in thought-provoking discussions on the latest advancements in visual ergonomics. The sessions will explore a diverse range of critical topics, including digital eye strain and its impact on productivity, optimized lighting design for various environments, advancements in display technologies, and the role of ergonomic interventions in reducing visual fatigue. Special attention will be given to the challenges posed by prolonged screen exposure, the evolving needs of hybrid and remote workspaces, and the integration of artificial intelligence in visual ergonomics solutions.

Through these interactive and knowledge-driven sessions, the committee aims to foster a deeper understanding of visual ergonomics' significance in enhancing human performance and well-being. By encouraging global collaboration and sharing cutting-edge research findings, the initiative aspires to equip professionals with practical strategies to create healthier, more comfortable, and sustainable visual environments for work, education, and daily life.

Recent Program



Linking Practice and Science in Visual Ergonomics

Last year's webinar was conducted in November. Participants from various parts of the world attended the sessions. It was an enriching experience for the organizing team members and the participants. We intend to organize more such webinars.

The webinar had six focused sessions:

Coping with presbyopia (Marino Menozzi, Ph.D., ETH Zurich, Switzerland).

Glare and flicker from LED luminaires (Hillevi Hemphälä, Lund University, Sweden).

Vergence-accommodation conflict in HMDs (Rudy Ying-Yin Huang, National Taiwan University, Taiwan).

Ergonomic evaluation in 3D displays (Frank Po-Hung Lin, Ph.D., National Kaohsiung University of Science and Technology, Taiwan).

Suppression of articulatory rehearsal mechanism and visual processing in driving (Sanjram Premjit Khanganba, Ph.D., Indian Institute of Technology Indore, India).

Computer vision syndrome: cause and prevention (Beatriz Redondo Cabrera, Ph.D., University of Granada, Granada, Spain).

Webinar: Linking practice and science in Visual Ergonomics

IEA Technical Committee: Visual Ergonomics

Date: Friday **15th November**, 2024
Time: 08:00 UTC
Duration: 90 mins

Brief summary of content: The goal of this webinar series is to showcase the research/projects in visual ergonomics conducted by executive members of the IEA Visual Ergonomics Technical Committee. The members have extensive experience in teaching/working within visual ergonomics. Throughout their speeches, they will establish links between practice and science, address the costs and benefits of the measures discussed, and increase awareness of visual ergonomics on a global scale.

Organiser's name and email: mmenozzi@ethz.ch
Marino Menozzi (PhD, Dr., senior scientist) |Human Factor Engineering |Lecturer at the Department of Health Sciences and Technology, ETH Zurich| Past president Swissergo |Past president umbrella association Suissepro

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Release of the Next Issue:

August 2025

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.