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Editorial

Sanjram Premjit Khanganba 

### Visual Ergonomics in a Converging World

In this issue of *Visual Ergonomics Digest*, as a special highlight, we are honored to present an insightful conversation with Prof. Marino Menozzi, past chair of the Visual Ergonomics Technical Committee of the International Ergonomics & Human Factors Association. His reflections provide not only a historical lens into the growth of this field but also a compelling vision for its future. As we navigate an era marked by rapidly evolving digital environments and increasingly complex human-machine interactions, the relevance of visual ergonomics cannot be overstated.

Prof. Menozzi's emphasis on the interdisciplinary nature of visual ergonomics—spanning vision science, lighting design, neurology, psychological science, engineering, and management studies—reminds us that this field is a vibrant confluence of knowledge systems. His call for lifelong learning and cross-sector engagement underscores the need for continued innovation and academic integration.

The way forward demands more than siloed expertise. It requires strategic collaboration between academic institutions, industry leaders, and policy-makers. Organizations are encouraged to actively support research in this domain, integrate human factors & ergonomic thinking into their digital transformation strategies, and participate in standard-setting dialogues. We must cultivate platforms where visual ergonomists can function as catalysts—connecting disciplines, solving problems, and shaping healthier, more inclusive work environments.

To our readers: This is an invitation to deepen your involvement, share your insights, and help chart the future of this transformative field. Let us turn dialogue into action and research into real-world impact that truly matters. The success of visual ergonomics will depend not only on innovation but also on our collective commitment to open dialogue, interdisciplinary thinking, and sustained collaboration.



Talking about visual ergonomics

A Special Highlight

## An interview with the immediate Past Chair of the IEA Visual Ergonomics Technical Committee

Prof. Menozzi completed his tenure 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

“The insights to get you through the day”

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.

In the next page, this issue of *Visual Ergonomics Digest* presents an extensive interview with Prof. Menozzi.



**Prof. Marino Menozzi, Ph.D.** 

**Email: [mmenozzi@ethz.ch](mailto:mmenozzi@ethz.ch)**

Currently, Prof. Menozzi Marino is advancing visual health and related scientific endeavors through various initiatives at the University of Lucerne, Switzerland. Previously, at the Eidgenössische Technische Hochschule Zürich (ETH Zurich), he led the Human Factors Engineering group within the Department of Health Sciences and Technology, focusing on visual accommodation, vergence, and workplace design.

# Visual Ergonomics and Its Relevance

Sanjram Premjit Khanganba: Thank you for having accepted this interview. Our work environments are changing constantly and the roles of ergonomics and human factors professionals are increasingly becoming more prominent. Under your leadership as Chair of the IEA VE TC, you have made efforts to promote the domain of visual ergonomics globally. What message do you have for those who are interested in this field?

Marino Menozzi: Always remember that Human Factors and Ergonomics (HFE) is a scientific discipline AND a profession. The symbiosis between the scientific discipline and the profession is very exciting but also quite challenging. Mastering these challenges is based on a holistic and systematic approach. Those who are interested in the field should preferably be prepared for a lifelong learning.

Sanjram Premjit Khanganba: We miss you in the IEA VE TC meetings and we would like to hear from you what's your favorite memory/experience related to the IEA VE TC?

Marino Menozzi: I was happy to work with very engaged colleagues in the IEA VE TC. Without them, projects such as the recent webinar (<https://youtu.be/lhbja2nadrw?feature=shared>) or the special issue on Visual Ergonomics in the International Journal of Industrial Ergonomics (<https://www.sciencedirect.com/special-issue/10G2JITW6KJ>) would not have been realized. Thank you very much!

Sanjram Premjit Khanganba: I strongly consider that visual ergonomics and other specialized domains should be integrated into formal academic degree programs. Please reflect your views on this.

Marino Menozzi: I totally share your idea. Integrating any subdomains of Ergonomics in academic programs is challenging. From my personal experience, a strong effort is required to sensitize the hosting institutions for particular properties of the scientific discipline of HFE. Challenging particularities of HFE are for example that successful HFE sometimes requires to compromise and that the impact factor of HFE publications is not top. The particularities are related to the fact that HFE solves problems of humans interacting in a complex environment. Particularities are not signs of a low-quality discipline.

Sanjram Premjit Khanganba: What are the greatest strengths that the domain of visual ergonomics has?

Marino Menozzi: In my view the greatest strengths is to enable the catalyzing effect when bridging vision scientists, ophthalmologists, neurologists, psychologists, lighting engineers, digital designers, human resources, and many more. To establish the catalyzing effect visual ergonomists should have a solid knowledge in all related disciplines, a big effort. However, visual tasks will remain forever at heart of interactions between humans and their environments. Therefore, the demand for Visual Ergonomics will persist.

Sanjram Premjit Khanganba: What message do you have for the current IEA VE TC and the readers of our newsletter.

Marino Menozzi: The IEA VE TC should always keep in touch with the readers. Involve your readers as "sensors" for the diverse issues at present and future work and share ergonomic solutions for the issues at work.

Sanjram Premjit Khanganba: Prof. Menozzi, I honestly thank you for talking to me. I look forward to connecting with you again.

Marino Menozzi: Thank you very much Prof. Khanganba. I wish you and the IEA VE TC all the best for a prosperous future ahead.

Spotlight

Beatriz Redondo Cabrera<sup>id</sup>

## Visual Ergonomics at University of Granada

One key aspect of visual ergonomics is understanding how modern visual demands, such as prolonged screen use, lighting conditions, and task complexity, affect eye health, comfort, and performance. At the University of Granada (Spain), the [CLARO](#) research group has been working to understand the physiological and cognitive mechanisms underlying visual fatigue and to develop practical strategies to reduce digital eye strain (DES) in academic, occupational, and daily contexts.

Early research within our group focused on identifying physiological indicators of visual fatigue during prolonged near work, with particular attention to the variability of accommodation, small involuntary changes in the eye's focusing system. This instability was associated with poorer behavioral performance, such as slower reaction times and increased errors, suggesting that accommodative dynamics are closely linked to attentional functioning (Redondo et al., 2019; Redondo et al., 2020; Vera et al., 2022).

These findings support the notion that ocular and cognitive fatigue may share common neural mechanisms, and that accommodation stability could serve as a reliable marker of visual strain. More recently, our research has focused on how ergonomic interventions, such as structured break schedules, influence both visual symptoms and performance.

In a study published in *Experimental Eye Research* (Redondo et al., 2025), we evaluated the effects of different break strategies, comparing the commonly known 20-20-20 rule with guided breaks including posture and visual exercises, on visual fatigue during 40-minute digital reading tasks.

These results showed that taking frequent breaks, either every 10 min or on a self-paced schedule, can help mitigate certain symptoms and signs of DES. These break patterns showed an advantage over the widely recommended 20-20-20 rule, indicating that more frequent or self-selected breaks may be more effective for managing DES.

These findings underscore the benefits of both structured and flexible approaches and highlight the need for adaptable break strategies to support visual comfort in digitally demanding environments.

Together, this body of work highlights the value of visual ergonomics as a multidisciplinary field that bridges vision science, cognitive psychology, and environmental design. By advancing our understanding of how visual and cognitive systems respond to sustained visual demands, our research contributes to the development of more effective strategies for preventing visual fatigue and promoting sustained performance. Ultimately, this knowledge can inform the design of personalized digital environments and adaptable work-rest schedules that support visual health, well-being, and long-term productivity.

References:

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About

## University of Granada

The University of Granada (Spanish: Universidad de Granada, UGR) is a prestigious public university located in the historic city of Granada, Spain, and was officially founded in 1531. As one of the most esteemed universities in Spain, it holds a unique and enduring legacy in academic excellence, research innovation, and cultural preservation.

The university's roots trace back to the Middle Ages with the founding of the Madrasa Yusufiyya in 1349 by Yusuf I, the Sultan of Granada. Accordingly, it is considered one of the most important universities globally in terms of historical significance and intellectual heritage. National and international ranking agencies collectively indicate that the UGR continues to make remarkable strides as a globally competitive higher education institution, ranking among the top 3% of universities worldwide. The 2018 edition of the Academic Ranking of World Universities (ARWU) places the University of Granada in 278th position globally and as the third-highest ranked university in Spain, reaffirming its standing as an institution at the forefront of national and international research leadership.

On 14 July 1531, the establishment of a *studium generale* (the traditional term for a medieval university) with the faculties of theology, arts, and canon law was granted by a papal bull issued by Pope Clement VII, marking the formal inception of the university and the beginning of its

distinguished journey in higher education and scholarly excellence. The university fosters international collaboration, innovation in interdisciplinary research, and global academic mobility across science, humanities, and technology domains. It is now approaching the celebration of the fifth centenary of its founding, a momentous milestone and one of its key strategic initiatives. This commemorative project aims to honor its enduring academic heritage while looking toward the future.

For more information, readers are encouraged to visit the official website of the university, <https://www.ugr.es/>.

Students, researchers, and professionals may write to Beatriz Redondo Cabrera, PhD (beatrizrc@ugr.es) for academic opportunities, scientific collaboration, and consultancy pertaining to the field of visual ergonomics and allied domains such as human-computer interaction, cognitive ergonomics, and human-centric design.



IEA Visual Ergonomics TC

## Visual Ergonomics Digest

August 2025

Volume 2025  
Number 2

The Newsletter of the IEA Visual Ergonomics TC, *Visual Ergonomics Digest* is published online 3 times a year, <https://iea.cc/member/visual-ergonomics>.

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# Release of the Next Issue: December 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 15<sup>th</sup> 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.

Hillevi Hemphälä, Ph.D., Chair (Lund University, Sweden)  
Rudy Ying-Yin Huang, Ph.D., Co-Chair (National Taiwan University, Taiwan)  
Frank Po-Hung Lin, Ph.D., Member (National Kaohsiung University of Science and Technology, Taiwan)  
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