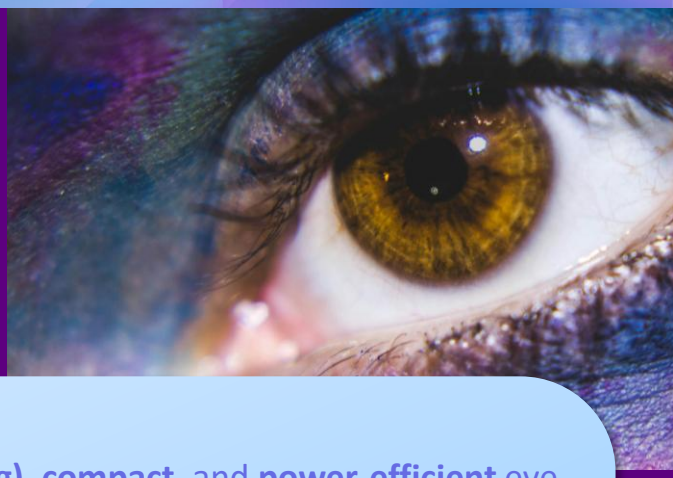
Project Newsletter II

vivaproject.eu



About VIVA

VIVA introduces an **ultra-lightweight (<0.2 g), compact**, and **power-efficient** eye-tracking solution by integrating **Laser Feedback Interferometry (LFI)** with **meta-optics**. Unlike traditional camera-based systems, this **camera-free approach** delivers **high-accuracy tracking** (~1 kHz sampling rate) while preserving **user privacy**.

By overcoming the limitations of **video-based** and **electro-oculography (EOG)** systems, VIVA sets a new benchmark for **ergonomic, all-day wearable eye-tracking**. The technology can support a **wide range of smart-glasses applications**, **from ultra-light autofocus eyewear to super-smart AR glasses**, while reinforcing **Europe's leadership** in **microelectronics** and **photonics**.

CAM design glasses intended as the prototype integration carrier for VIVA.

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The project is supported by the Chips Joint Undertaking (Chips JU) and its members, including top-up funding by Denmark, Germany, Netherlands, Sweden, under grant agreement No. 101139942.

VIVA Consortium meeting in Pamplona

Sep 30 & Oct 1, 2025

VIVA consortium gathered in Pamplona to review the technical progress of the project and coordinate the next integration and validation activities.

GA Meeting in Pamplona.

Preparing the Future of VIVA

During the meeting, the partners presented the **progress achieved in their WP**, including technological developments, validation activities, and dissemination actions. The next project tasks were defined, and **collaboration among partners** was reinforced.

Key Highlights

- Review of technical progress across all work packages
- Coordination of next-stage integration activities
- Discussions on dissemination and exploitation actions
- Strengthening collaboration among consortium partners

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VIVA Consortium meeting in Munich

Feb 24 & 25, 2026

The project partners met in **Munich** to continue advancing the integration, validation, and exploitation activities of the VIVA technologies.

📍 GA Meeting in Munich

Consolidating the Technology

The meeting provided an opportunity to **review the status of the technical developments**, plan the upcoming demonstrations, and coordinate future deliverables.

Discussions also focused on industrial exploitation, **collaboration among partners**, and the preparation of the next stages of the project.

Key Highlights

- Progress review on system integration activities
- Preparation of validation and demonstration phases
- Coordination of upcoming deliverables and milestones
- Discussions on industrial impact and exploitation

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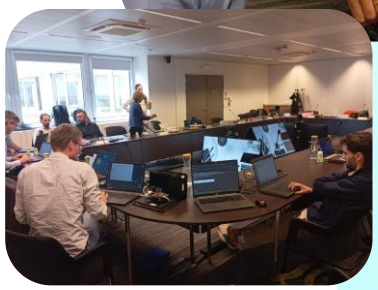
Successful First Project Review in Brussels

Jul 9, 2025

The VIVA project **successfully completed its first official review meeting** with the European Commission in Brussels.

📍 Chips JU Review in Brussels.



Consolidating the Technology

During the review, **the consortium presented the main technical achievements**, dissemination activities, and future project planning. The reviewers positively highlighted the quality of the work performed and the strong coordination among the project partners.

Key Highlights

- Successful completion of the first EC review
- Positive feedback from reviewers
- Presentation of technical and dissemination achievements
- Consolidation of future project roadmap

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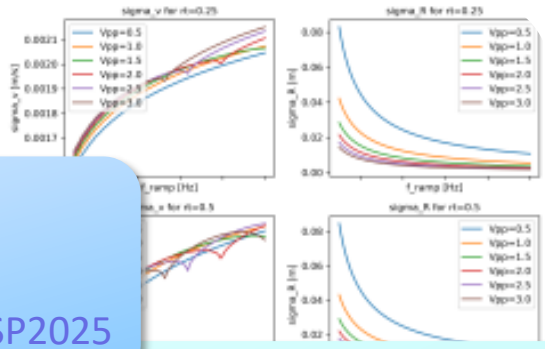
Publications and Research Highlights

User Identification with LFI-Based Eye Movement Data Using Time and Frequency Domain Features

This work explores the **use of LFI-based eye movement** data for biometric user identification. The publication combines time-domain and frequency-domain feature extraction methods to demonstrate how eye movement patterns can serve as unique identifiers. The results **highlight the potential of next-generation eye-tracking technologies** for secure authentication and personalized human-machine interaction.

Summary

- **Partner:** TUM
- **Conference:** DSP2025



Summary

- **Partner:** TUM
- **Conference:** DSP2025

A Novel Signal Processing Strategy for Short-Range Laser Feedback Interferometry Sensors

The publication presents a new signal processing strategy aimed at improving the performance of **short-range Laser Feedback Interferometry sensors**. The proposed approach enhances signal robustness, minimizes noise sensitivity, and improves measurement reliability for wearable eye-tracking applications. The research supports the development of compact and energy-efficient sensing solutions for future smart glasses technologies.

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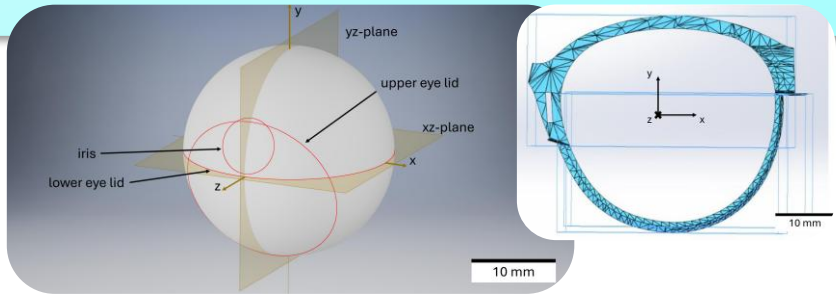
Publications and Research Highlights

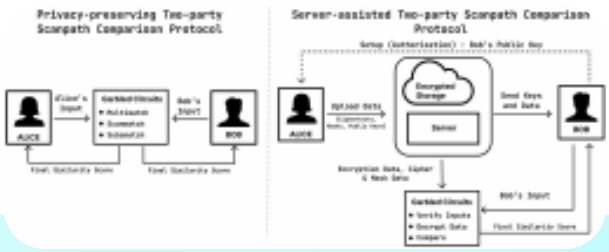
Optical Sensor Positioning for Eye-Tracking with Numerically Efficient Raytracing Models

This publication focuses on the **optimization of optical sensor positioning for eye-tracking systems** using numerically efficient raytracing models. The proposed methodology enables more accurate optical simulations while reducing computational complexity, supporting the design of compact and high-performance wearable eye-tracking devices.



Summary

- **Partner:** RWTH
- **Conference:** SPIE 2025



Summary

- **Partner:** TUM
- **Conference:** ETRA 2026

Secure Storage and Privacy-Preserving Scanpath Comparison via Garbled Circuits in Eye Tracking

This publication introduces a **privacy-preserving framework** for secure storage and comparison of eye-tracking scanpaths using garbled circuit techniques. The proposed approach enables **secure biometric processing** while protecting sensitive user information, contributing to the development of trustworthy and privacy-aware eye-tracking applications.

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International Dissemination Activities

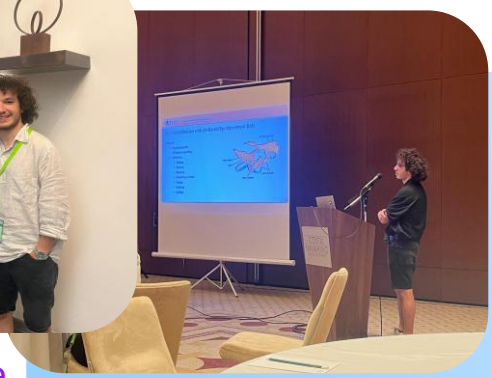
Highlights from Recent Conferences

Our partners had the opportunity to participate in major international events:

ETRA 2025
Symposium on Eye Tracking Research & Applications

Tokyo, Japan

VIVA researchers presented several contributions related to eye-tracking technologies, privacy-aware AI, and wearable sensing systems.



Messinia, Greece

DSP 2025
International Conference on Digital Signal Processing

The VIVA consortium presented multiple scientific contributions focused on signal processing techniques for Laser Feedback Interferometry eye-tracking.

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International Dissemination Activities

Highlights from Recent Institutions

Our partners had the opportunity to be visited by federal agencies in their institutions:

BMFTR

Federal Ministry of Research, Technology and Space

Representatives from the BMBF visited the Technical University of Munich (TUM), where the VIVA project was briefly presented during the visit alongside other ongoing research and innovation activities.

Munich, Germany

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VIVA

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NIL TECHNOLOGY

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