

Master in Photonics – “PHOTONICS BCN”

Master ERASMUS Mundus “EuroPhotonics”

MASTER THESIS PROPOSAL

Dates: April 2022 – July 2022

Institution: Inmersia Computer S.L

City, Country: Castelldefels, Spain

Title of the master thesis: Design of new Near-Eye Display systems for AR and VR glasses.

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Keywords: Augmented reality, virtual reality, smart glasses, near-eye display.

Summary of the subject (maximum 1 page):

Augmented reality (AR) and virtual reality (VR) are technologies with great potential, which could represent an even more disruptive change than the appearance of smartphones. However, despite the enormous technological advances in recent years, it has not yet been possible to design compact smart glasses that offer a sufficiently immersive experience to be adopted as an everyday solution. The main limitation is imposed by the currently available technology in near-eye display (NED) systems, consisting of a projection system integrated with the glasses lens, which are the key element in charge of showing the virtual content to the user. Nowadays, there is the lack of compact NED systems offering a wide field of view and a high-end visual experience.



The objective of this MSc thesis is the design of a new NED optical system for AR/VR glasses, which solves the limitations of currently available systems (bulkiness, limited field of view and vergence-accommodation conflict among others).

To achieve this goal, the tasks to be carried out in the project will include the research on novel optical design strategies for NED systems, their simulation and optimization.

This project will be carried out in collaboration with the CD6-UPC.

Additional information (if needed):

*** Required skills:**

- Interest in application-driven experimental work for solving real-world problems.
- Basic concepts in optical design software (Zemax OpticStudio, Code V,...).
- Programming skills in Matlab or Python.
- Self-motivated, objective-driven, capable of autonomous working within a multidisciplinary team.

*** Miscellaneous:**

- Interested in candidates to later do the PhD with the Centre and the Company.
- The candidate will receive compensation for the hours dedicated to the project at the company Inmersia Computers S.L.
- This thesis contents will be considered confidential.
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