



Novel smartphone-based ways to estimate corneal irradiance

Computational imaging methods for measuring light at the eye.

Tübingen / Munich · English · Master's thesis · Research internship · Erasmus+ research placement · Engineering project

The question

Could a smartphone help estimate the light reaching the eye? Corneal irradiance is relevant to understanding light exposure, yet measuring it reliably outside a specialised laboratory remains a practical challenge.

The project

Explore novel smartphone-based methods as an engineering and computational imaging problem. Work will combine controlled optical measurements with calibration, signal processing or computational modelling. The underlying measurement implementation is reserved for discussions with prospective students.

What you will do

- Review measurement principles and sources of error in optical sensing.
- Develop and evaluate a defined component of a measurement or analysis workflow against reference measurements.
- Quantify uncertainty, robustness and limitations, documenting code and calibration work reproducibly.

Possible scope

An engineering project or thesis could focus on development and quantitative validation. A shorter placement could examine calibration or a bounded modelling question. Strong programming and quantitative skills are useful; optics or imaging experience would be an advantage.

Suitable backgrounds

Engineering · Biomedical engineering · Computer science · Data science

General expectations

You should be able to analyse data in R or Python, use Git and GitHub, and work reproducibly. Independent reading, careful documentation and increasing responsibility are expected. Previous sleep or circadian research experience is not generally required.

Funding

No salary or stipend from the research group unless explicitly stated. Master's theses are generally unpaid. Mention external funding or mobility programmes when applying.

Suggested backgrounds are not formal programme approval. Confirm requirements with your home institution.

How to apply

Send a short motivation, CV, relevant skills, preferred project, dates, format and location. Mention external funding. Contact Prof. Manuel Spitschan using the address below.

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