



Can smartphones estimate circadian light exposure?

Evaluating an everyday device against research-grade light measurements.

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

The question

Smartphones are carried through many everyday environments. Could their measurements support useful estimates of circadian light exposure, and where would those estimates become unreliable?

The project

Evaluate smartphone-derived light information against suitable reference measurements. The project focuses on accuracy, variability between devices and conditions, and the difference between a convenient proxy and a defensible exposure measure.

What you will do

- Review phone sensing capabilities and biologically relevant light metrics.
- Develop a reproducible calibration or comparison workflow using controlled measurements or an agreed dataset.
- Quantify errors, uncertainty and practical limits across relevant conditions.

Possible scope

A thesis or engineering project could address validation and modelling. A shorter placement could focus on a defined device comparison or analysis component. Programming, signal processing or measurement-science experience would be useful.

Suitable backgrounds

Engineering · Biomedical engineering · Computer science · Data science · Health 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.

Munich: manuel.spitschan@tum.de

Tübingen: manuel.spitschan@tuebingen.mpg.de