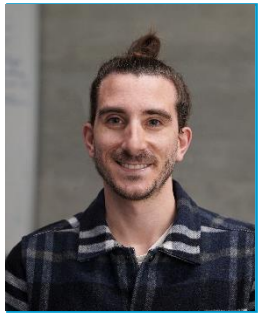


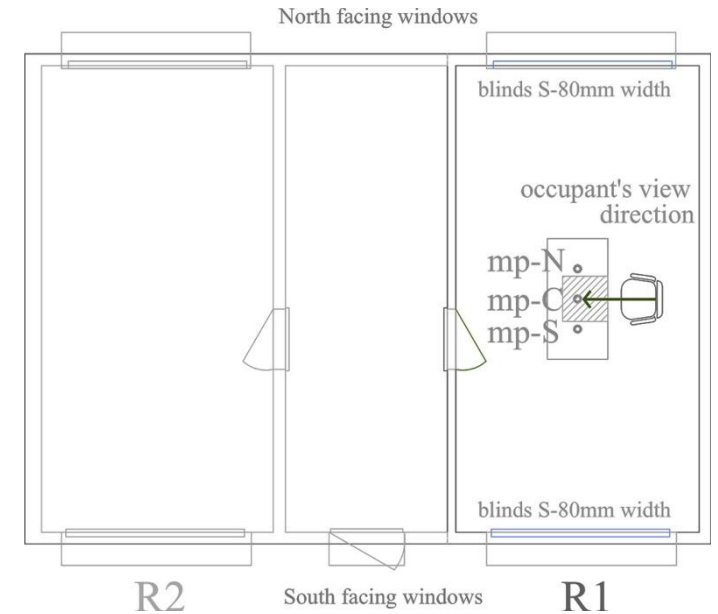
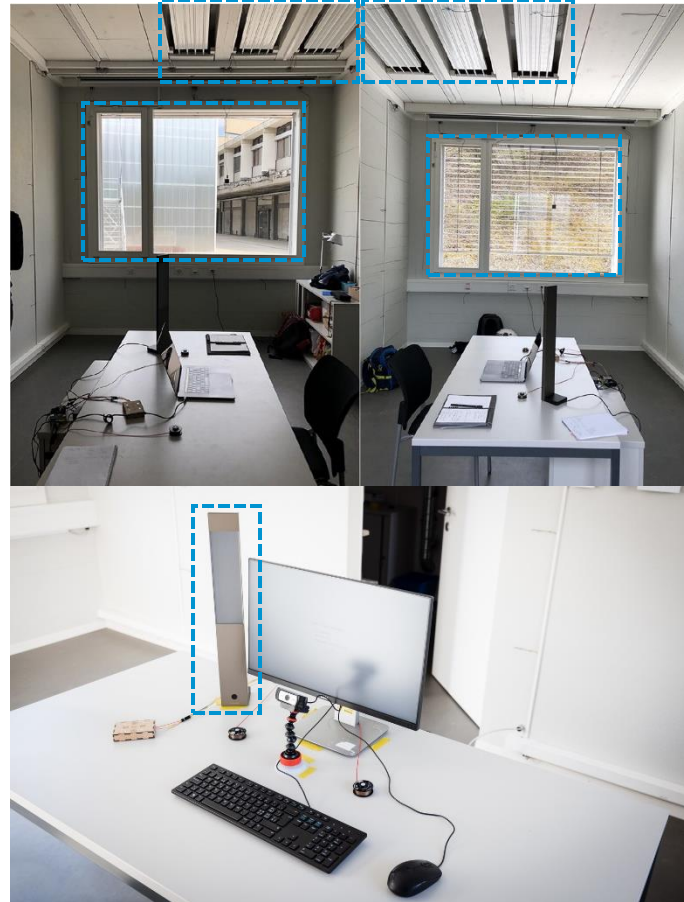
# Saving energy by maximising daylight and minimising the impact on occupants: an automatic lighting system approach



Roberto Boghetti



Controlled Environments for Living Lab Studies (CELLS) in Fribourg, used as testing facility



Setup of controlled experiment

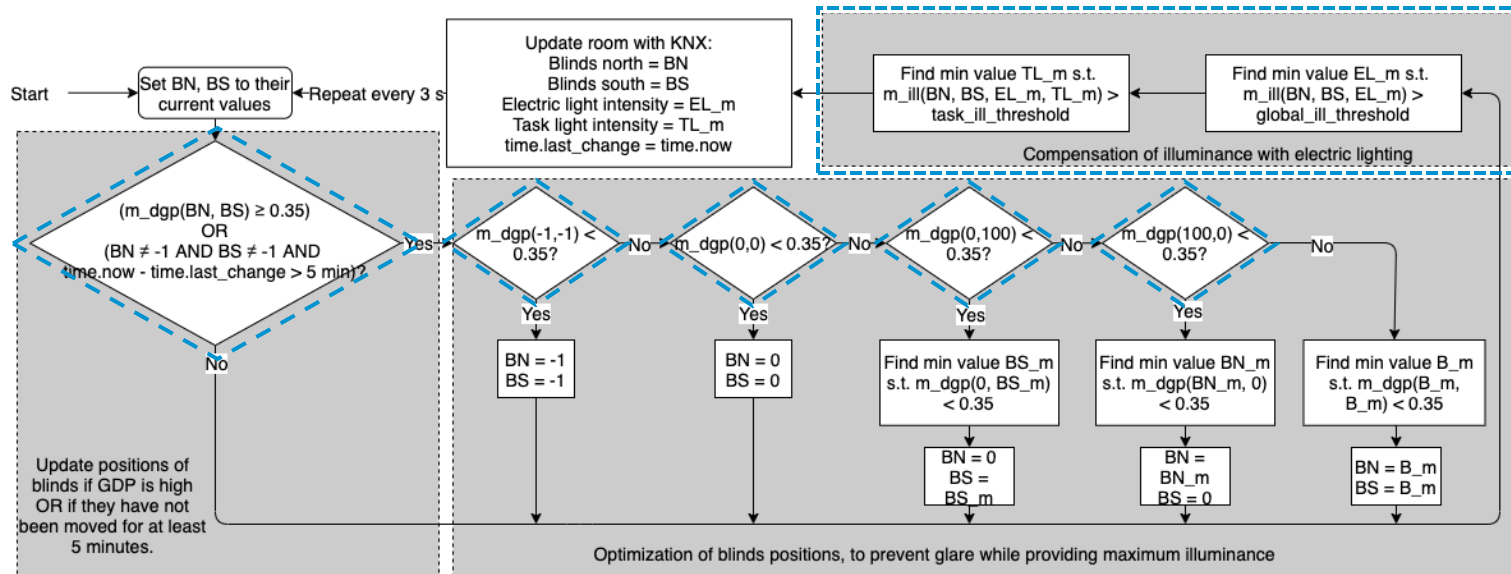
Papinutto, Michael, et al. "Saving energy by maximising daylight and minimising the impact on occupants: An automatic lighting system approach." *Energy and Buildings* 268 (2022): 112176.

# Control scheme

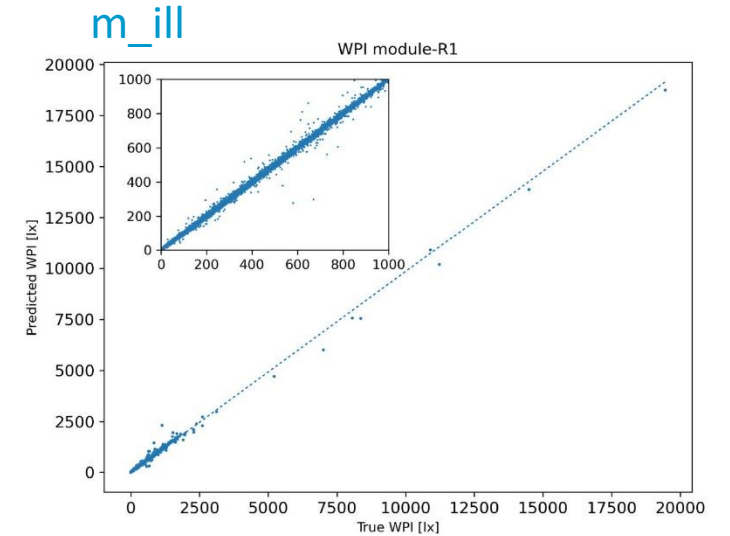
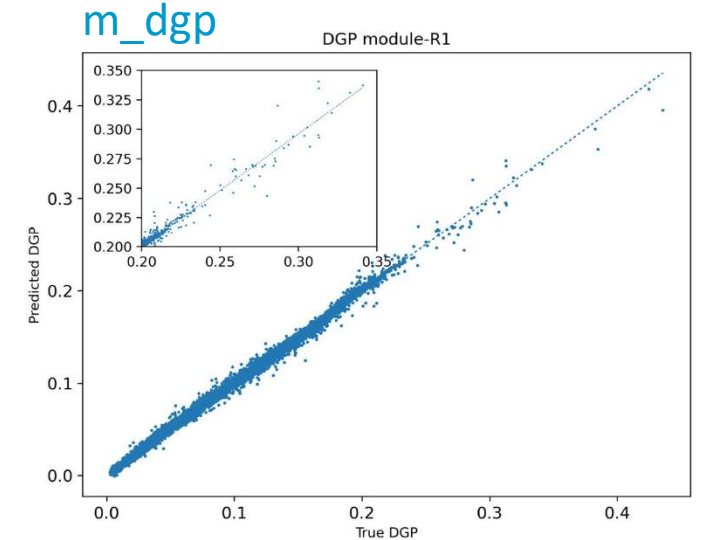
Operating modes:

- (1) Completely manual (*manual*)
- (2) Completely automated (*automated*)
- (3) Automated with user control in CCT curve of task lighting (*user input*)

Goal of automation: maintaining a **Work Plane Illuminance (WPI)** above 300 lx and **Daylight Glare Probability (DGP)** below 0.35.

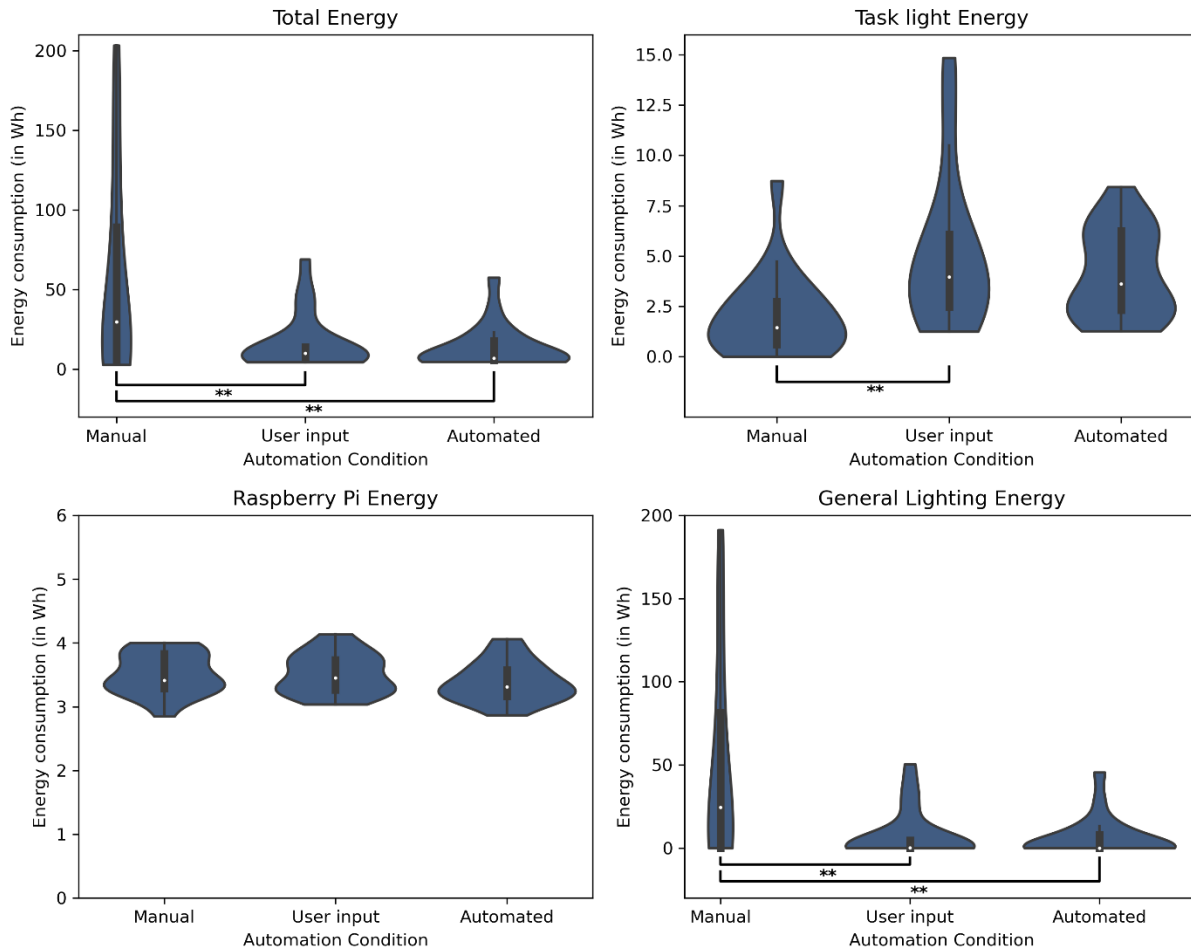


Control scheme

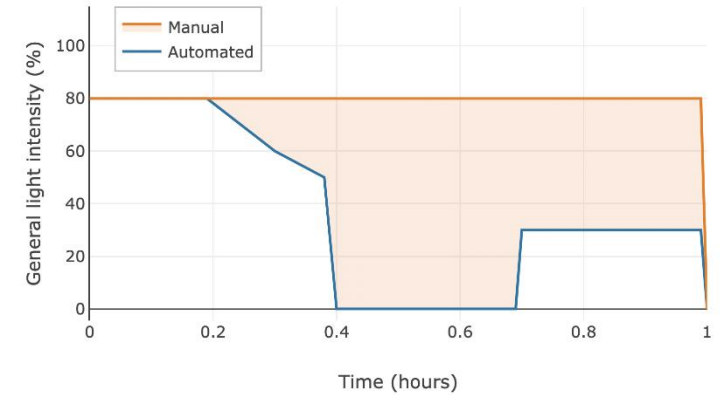


Surrogate models performance

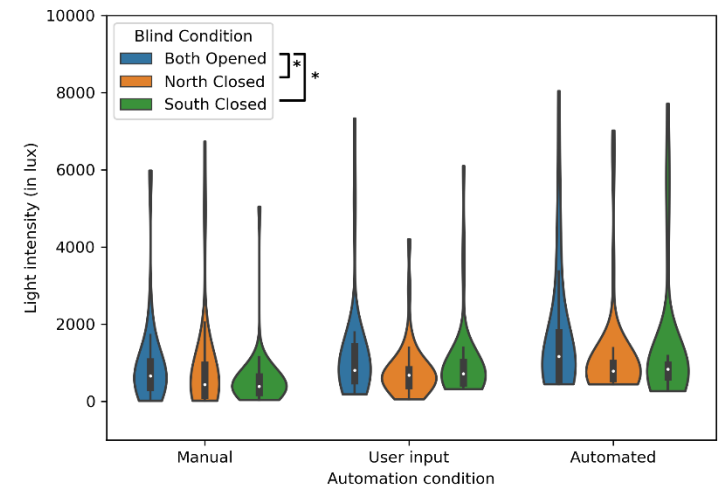
# Controlled experiment results



Energy use of the different operating modes



Example of general lighting intensity during experiment



Example of general lighting intensity during experiment

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