WEPOP OBJECTIVES

WEPOP aimed to move beyond traditional, one-size-fits-all comfort models by:

- Integrating environmental sensing and physiological monitoring;
- Developing Personal Comfort Models (PCMs) based on real individual responses;
- Applying AI-driven data analysis;
- Enabling real-time interaction with HVAC and building systems;
- Bridging research and real-world applications.

WEPOP is the result of a strong collaborative effort among four academic partners (UniEcampus, UNIVPM, UNIPG and UNIPA) each contributing complementary expertise in sensing technologies, data analysis, comfort modelling and experimental validation.

WEPOP

The research has been founded by European Union, next Generation EU, Mission 1 Component 2, through the WEPOP (Prot.2022RKLB3J) ''WEarable Platform for OptImised Personal comfort'' project, within the PRIN 2022 program.

PARTNERS

eCAMPUS UNIVERSITÀ

STUDIUM GENERALE CIVITATIS PERUSII · A.D. MCCCVIII ·

UNIVERSITÀ POLITECNICA DELLE MARCHE

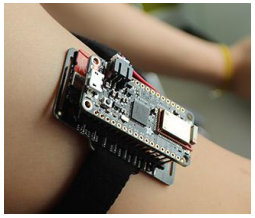
PANORMITANÆ STVDIORVM VNIVERSITATIS SIGILLVM

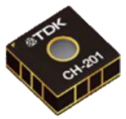
wepop

WEarable PlatfOrm for Personalized comfort

MONITORING & ANALYSIS

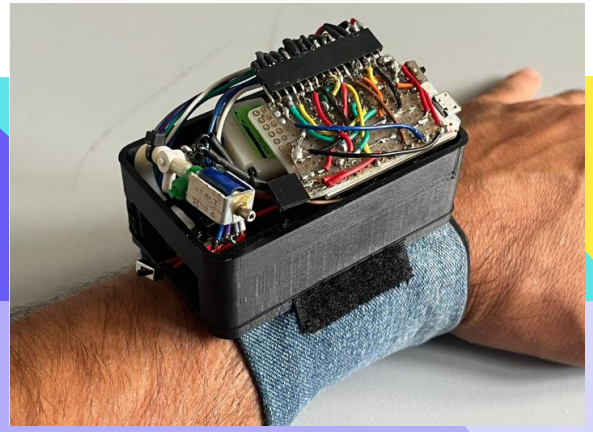
WEPOP integrated environmental sensing and physiological monitoring, combining activity recognition, metabolic estimation and bio-signals to develop AI-driven Personal Comfort Models for human-centric indoor comfort assessment.





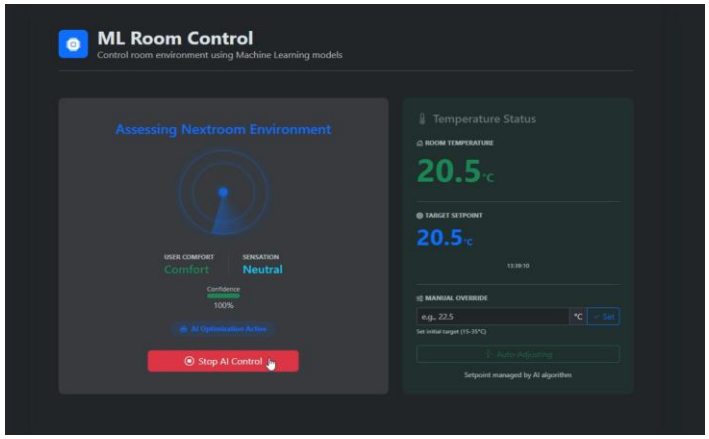
WEARABLE SYSTEM

An innovative PPG-based wearable with automatic contact-pressure adjustment improved signal quality and reliability, enabling accurate cardiovascular monitoring and early detection of thermal discomfort during everyday activities.



EXPERIMENTAL VALIDATION

Over 100 participants were involved in controlled, realistic campaigns, confirming that physiological responses anticipate perceived discomfort and can be integrated with HVAC systems for adaptive climate control.



FINAL OUTCOMES

WEPOP lays the foundation for human-centric buildings, enabling standardized physiological-based Personal Comfort Models. Its integrated platform supports real-time comfort management, HVAC integration, and adaptive environments, enhancing well-being, productivity, and energy efficiency, bridging experimental research and scalable, real-world applications.

Two datasets have been published in Open Access:

- The Human Experience in Regulated Offices (HERO) dataset, link: https://zenodo.org/records/16980698
- The Human Experience in Regulated offices Extended (HEROx) dataset, link: https://zenodo.org/records/18598884

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Ministero dell'Università e della Ricerca
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