



STUDY VISIT AND MATCHMAKING DIGITAL HEALTH



**Industry
Contact
Point**
Medical
Technologies
and Health



**Industry
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Point**
Digital
Transformation



**Industry
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Industry 4.0



Health

Co-funded by the
European Union



**LOWER
SILESIA**



**DOLNY
ŚLĄSK**

Intro

- Organisation unit/name: **Warsaw University of Technology**
- Organisation type: **research university**
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<https://eng.pw.edu.pl/> (in English)

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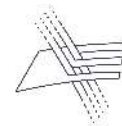
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Warsaw University of Technology



- founded in 1826, the biggest and the oldest Polish technical university;
- 19 faculties + CEZAMAT technological centre;
- 2 500 teaching and R&D staff members;
- 21 000 students;
- 120 (98 HE) international projects granted in years 2020-2025;
- 66 (55 HE) international projects currently on board;
- digital health represented at 6 units



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our research support asset



MANUFACTURING TECHNOLOGY

CHARACTERIZATION & TESTING

DESIGN & PROTOTYPING

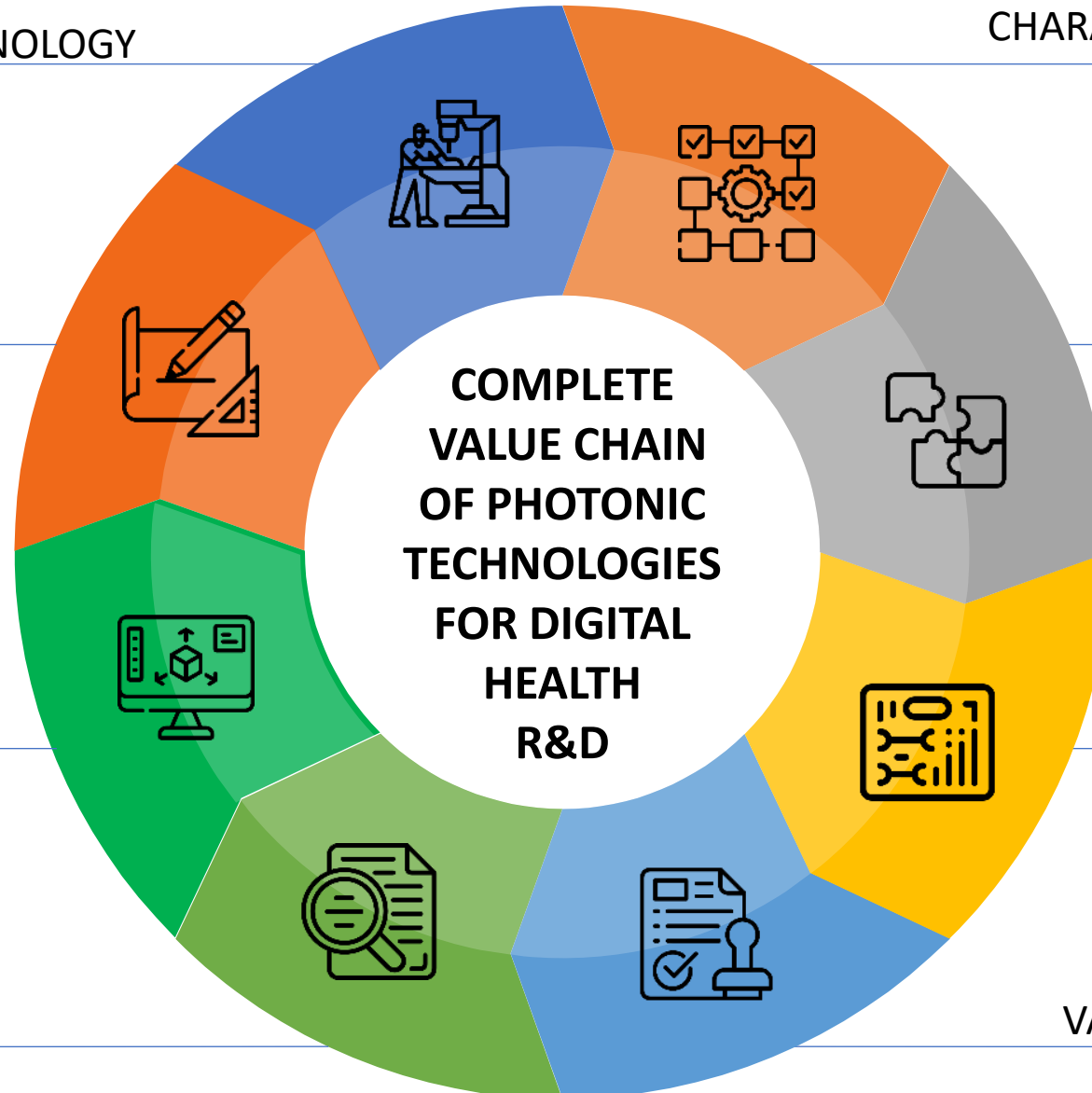
INTEGRATION

NUMERICAL MODELLING

PACKAGING

PROBLEM ANALYZING

VALIDATION & OPTIMIZATION



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project idea



SmartBED - Non-Invasive Health Monitoring System

Sensing system framework:

- a network of fiber Bragg gratings sensors
- photonic interrogator
- driving electronics
- software for real-time signal analysis

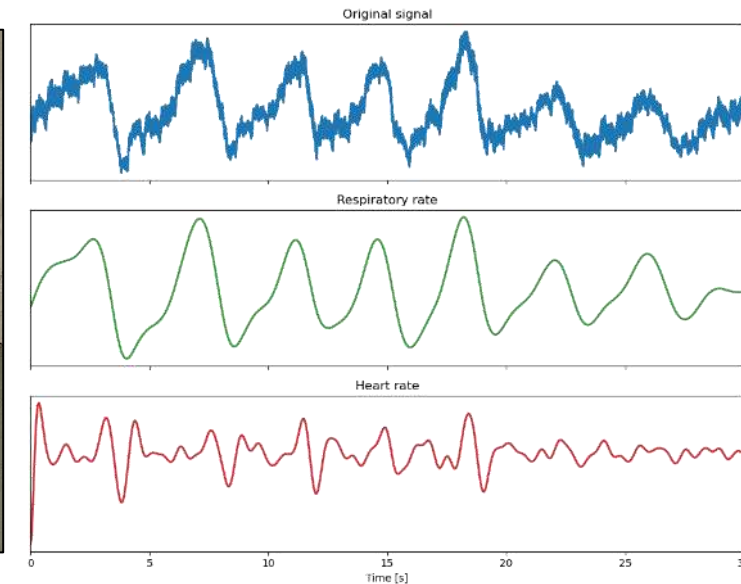
Information acquired:

- heart rate (HR)
- respiratory rate (RR)
- temperature (T)
- and potentially much more...

Proposed project scope:

- optimizing the system with respect to different users, operating conditions, and requirements (hospital wards, nursery homes, consumer use);
- complementing pure RR and HR detection with more advanced diagnostic features (ML/AI-based);

confirmed respiratory rate (RR) and heart rate (HR) detection!

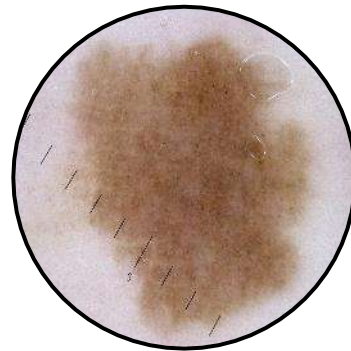


Calls of interest

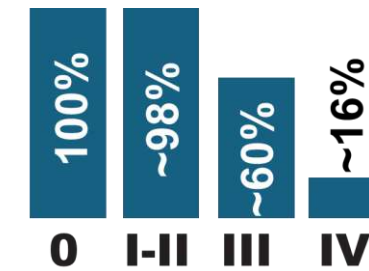
- HORIZON-HLTH-2026-01-DISEASE-01: Innovative healthcare interventions for non-communicable diseases
- HORIZON-HLTH-2027-01-CARE-01: Public procurement of innovative solutions (PPI) for improving citizen's access to healthcare through integrated care
- HORIZON-CL4-2027-04-DIGITAL-EMERGING-04: Challenge-Driven AI Innovation Booster in Apply AI prioritised sectors

AI-supported Early Melanoma Diagnosis Tools

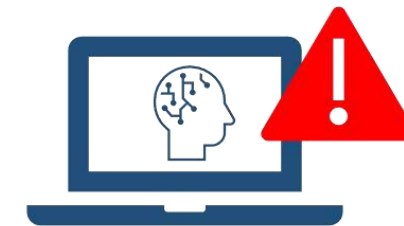
AIM: Deliver a clinically meaningful AI support tool that ensures high diagnostic accuracy across all melanoma stages, enabling earlier interventions and successful treatment.



Who/What We Need: Clinical collaboration with dermatologists for data gathering and analysis, multispectral imaging and AI experts, system developers etc.



5-Year Relative Survival Rate of melanoma diagnosed at Stage I is 97.6% while at Stage VI is only 16.2%^[1]



Our preliminary research^[2] shows that current AI solutions perform poorly for in situ and thin melanomas

[1] <https://training.seer.cancer.gov/melanoma/intro/survival.html>

[2] A. Dzieniszewska et al. „Early-Stage Melanoma Benchmark Dataset”, Cancers 2025, doi: 10.3390/cancers17152476.

Calls of interest

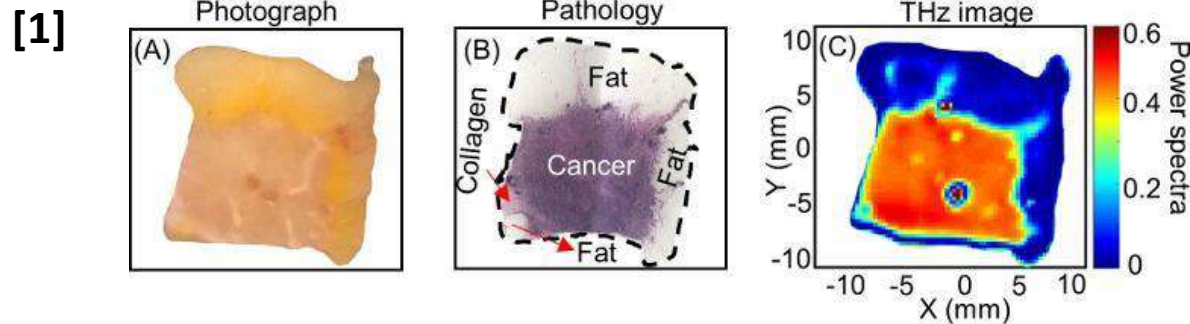
- HORIZON-HLTH-2027-01-ENVHLTH-MISSCLIMA-03: Tools and technologies to support health adaptation to climate change → Melanoma risk is directly linked to UV exposure, which is an environmental factor affected by climate change.
- HORIZON-HLTH-2026-01-CARE-01: Public procurement of innovative solutions (PPI) for improving citizen's access to healthcare through integrated care → Use of an AI melanoma diagnosis model could improve healthcare accessibility in rural areas, thus relaxing pressure on the health care system.
- HORIZON-HLTH-2027-02-IND-02-two-stage: Portable and versatile Point-of-care diagnostics → An AI model for early melanoma diagnosis can be integrated into a portable diagnostic tool, such as a mobile application, offering fast and accurate diagnosis directly at the point of care.
- HORIZON-CL4-2027-04-DIGITAL-EMERGING-04: Challenge-Driven AI Innovation Booster in Apply AI prioritized sectors → Advanced AI model could accelerate the melanoma diagnostic process, enabling more precise and timely treatment plans and improving patient care through predictive analytics.

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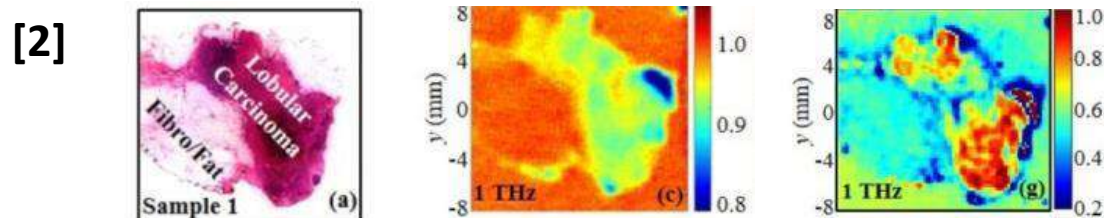
DIGITAL HEALTH

project idea

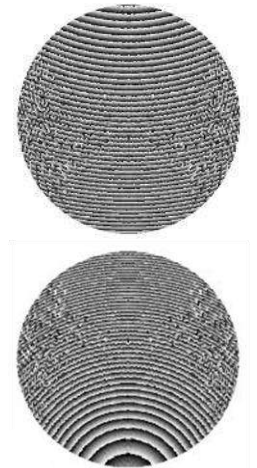
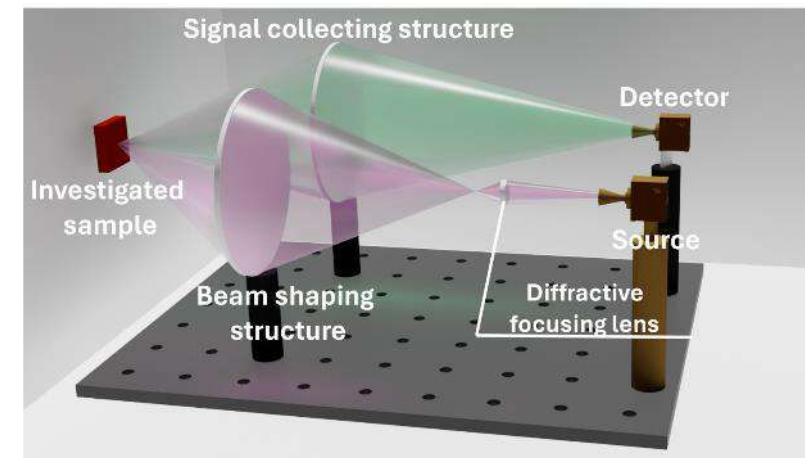
THz-supported Early Melanoma Diagnosis Tools



Terahertz Radiation Utilization: unique properties of terahertz radiation allow for non-invasive imaging of skin tissues, which can provide critical insights into the early detection of skin cancers.



Customized Diffractive Modules: specially designed and tailored diffractive modules allow to miniaturize the entire imaging system.



In general, such design will lead to more versatile and adaptable systems that can be integrated into a wider range of environments (not only THz and not only applications to health).

[1] (<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5030048/figure/g011>)

[2] doi: 10.3791/61007

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project idea



THz-supported Early Melanoma Diagnosis Tools

Scope of the project – an innovative imaging device that incorporates **novel diffractive modules**, designed to be scalable across various **spectral ranges**, allowing for adaptability to specific medical needs, particularly in the context of skin cancer detection.

Our expertise – designing optical systems and optical elements for various spectral ranges;

Who/what is needed – we are actively seeking partners who are passionate about advancing medical technology and share our commitment to improving skin cancer detection. Your expertise in biomedical engineering, and clinical applications would be invaluable to the success of this project.

Calls of interest

HORIZON-HLTH-2027-01-CARE-01: Public procurement of innovative solutions (PPI) for improving citizen's access to healthcare through integrated care (PPI)

Point-of-care diagnostics of cell and tissue samples

Scope of the project – Compact platforms for label-free high-throughput in vitro examination of biomedical slides via holographic and ptychographic microscopy

Our expertise – label-free computational imaging technology

Who/what is needed – we are actively seeking partners who are devoted to advancing medical technology for faster cell culture and tissue slice level quantitative diagnostics with expertise in biomedical and clinical applications.

Calls of interest

HORIZON-HLTH-2027-01-CARE-01: Public procurement of innovative solutions (PPI) for improving citizen's access to healthcare through integrated care (PPI); HORIZON-HLTH-2027-01-IND-02: Portable and versatile Point-of-care diagnostics; HORIZON-CL4-2027-04-DIGITAL-EMERGING-04: Challenge-Driven AI Innovation Booster in Apply AI prioritized sectors

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project idea



Extended ECG and ECGI techniques for early and precise cardiopathy detections

Scope of the project – software, AI based (deep learning) solution that uses ECG signal to calculate deconvoluted activation function with physical basis. Usable with every ECG record. Aimed to be SaaS.

Our expertise – formulating innovative theory and creating model which supports it.

Who/what is needed - we seek institutions that are eager to share clinical ECG & MRI (full body scan – best possible scenario) data in order to validate and improve our solutions.

HORIZON-HLTH-2027-01-CARE-01: Public procurement of innovative solutions (PPI) for improving citizen's access to healthcare through integrated care (PPI)

Calls of interest

HORIZON-HLTH-2027-01-CARE-01: Public procurement of innovative solutions (PPI) for improving citizen's access to healthcare through integrated care (PPI)

- early detection of hard to detect cardiopathies like ARVC (**prevention**)
- Pricse, in vitro imaging of cardiac electric activity to shorten and simplify ablation process (**accelerate treatment**)

HORIZON-HLTH-2027-01-CARE-01: Public procurement of innovative solutions (PPI) for improving citizen's access to healthcare through integrated care (PPI)



Thank you



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