CONNECTING WEARABLES, CAREGIVERS AND CLINICS WITH EXPLAINABLE AI

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Cardiovascular disease (CVD) is the leading cause of death among older adults in Poland. In 2023, almost 40% of all deaths in seniors were due to CVD, and the Łódzkie Voivodeship recorded the highest mortality rate among older adults in the country (GUS, Sytuacja osób starszych w Polsce w 2023 roku). Local epidemiology, environmental conditions, lifestyle patterns and resource constraints create region-specific risk signs that limit the effectiveness of one-size-fits-all automated solutions. Solving this problem needs more than good AI prediction models, as we also need systems that consider the local population, the way doctors and nurses actually work, and the network of family and paid caregivers who look after patients.

This abstract presents the motivation, local data foundation and anticipated impact of an explainable, patient-centered AI system we aim to develop for older adults in Łódź. Through a partnership with HRP Care Sp. z o.o., anonymized telemonitoring data for 2,000+ local seniors (continuous heart-rate/ECG segments, activity and sleep traces, and socio-demographic information) will provide the empirical basis for a solution tailored to the city's needs. Figure 1 shows the System Interaction Diagram. The AI is envisioned as a bridge: it would connect the wearable band, telecarers, on-site acquaintances/caregivers and clinicians. The system is designed to send prioritized, filtered alerts and give short, patient-level explanations so carers and doctors can quickly understand what the AI has detected.

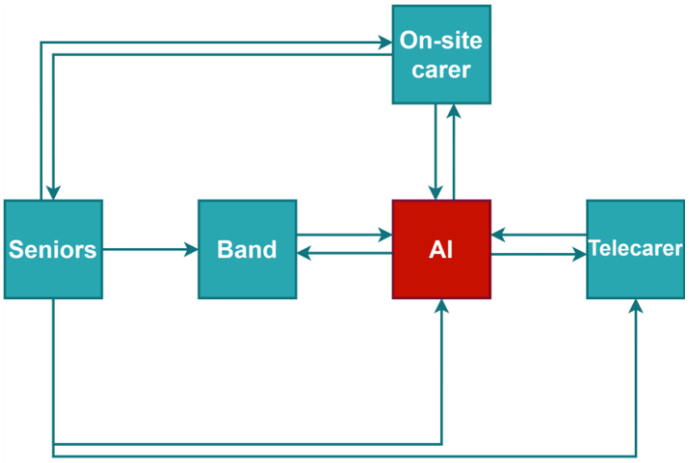


Figure 1. System Interaction Diagram.

Our main idea is a system designed to be explainable, clinically useful and practical for triage. Expected benefits include earlier detection of unusual changes from a person's own baseline, clearer explanations that help clinicians understand the problem faster, and fewer false alarms for caregivers. This approach could help clinicians focus on the most urgent patients and improve triage where medical staff are limited. In summary, we believe that an interpretable AI system trained on local data and connected to existing care networks has the potential to help detect problems earlier and make care coordination for Łódź's seniors more effective.