Press Release
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BioRegio STERN

smart analytics – 3D RADAR scanner German/French development project

Contactless measurement of respiration and heartbeat

(Stuttgart/Tübingen) – Tübingen-based Synovo GmbH is working in collaboration with the French company ADBInno SARL and the Institute of High-Frequency Technology at Hamburg University of Technology (TU Hamburg) to develop the contactless 3D RADAR scanner for diagnostics in human and veterinary medicine. The 3D RADAR scanner means that, for the first time, physical examinations of respiration and heartbeat can be carried out without direct contact. The German/French development project is being funded within the smart analytics international cooperation network of the Central Innovation Programme for SMEs (ZIM) run by the German Federal Ministry for Economic Affairs and Climate Action (BMWK).

Experienced doctors can use their sense of touch and stethoscope to assess a patient's respiration, heartbeat and many other physiological functions, and thus the associated signs of disease. However, this examination involves close physical contact with patients, meaning that medical staff are exposed to a high risk of infection. This risk is particularly high during the first examination, when the patient's infection status is not yet known. Furthermore, the increasing skills shortage means there are fewer and fewer experts available in the healthcare sector. In veterinary medicine, too, diagnostics often involves a stressful examination and major effort, such as when performing a health check on farm animals.

However, the three partners involved in this project – Synovo GmbH, ADBInno SARL and the Institute of High-Frequency Technology at TU Hamburg – have come up with a solution. Together, they are developing a 3D RADAR scanner to facilitate a diagnostic procedure that involves examining patients without touching them. The innovation involves the contactless recording of minimal vibrations of the surface of the body that are caused by respiration and heartbeat, along with other physiological parameters. The scanner records these from a distance ranging from decimetres to metres, so there is absolutely no risk in terms of hygiene. The diagnostic analysis is

performed with the aid of a computer and separately from the examination. It is also supported by artificial intelligence (AI).

In its sub-project, which is part of the overall cooperation project, Tübingen-based Synovo GmbH is focusing on the development and verification of hardware and software for use in the veterinary medicine sector. The French company ADBInno SARL is developing the hardware concept for a simple, low-frequency scanner for monitoring respiration in human medicine. TU Hamburg's part of the project involves developing and designing the hardware concept for an innovative, high-frequency, multi-channel scanner.

"The medical 3D RADAR scanner is a completely new diagnostic technology with wide-ranging market potential," explains Nina Henzler, who is in charge of project and technology transfer management at BioRegio STERN Management GmbH. "It can be used in many diagnostic areas within human and veterinary medicine. What's more, it gives rise to new, safe prospects for the contactless monitoring of vital parameters in both clinical and non-clinical settings."

This is already the second German/French research project to be funded by the German Federal Ministry for Economic Affairs and Climate Action (BMWK) within the smart analytics international cooperation network. Since its inception, the ZIM cooperation network has already received total funding of around five million euros.

Interested companies can contact Dr. Verena Grimm:
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About smart analytics
The Central Innovation Programme for SMEs (ZIM) run by the German Federal Ministry for Economic Affairs and Climate Action (BMWK) is funding an international cooperation network – smart analytics – for the development of intelligent and innovative analytical methods.
BioRegio STERN Management GmbH is coordinating the international smart analytics ZIM network in Germany. The project is being funded by the BMWK and includes 30 partners from Europe. Other companies are welcome to become project partners. This will give them access to targeted support so that they can submit equally promising research and development applications to ZIM as necessary.

About Synovo GmbH
Since its foundation as a pharmacological research company in 2004, Synovo has continuously expanded its expertise. With its team of scientists and technicians from a range of disciplines, Synovo offers scientific services for the pharmaceutical industry.

Synovo also works on in-house research projects in the fields of oncology and anti-infective drugs.

About ADBInno SARL
ADBInno, a French startup that was founded in 2020, aims to develop innovative electronic medical equipment. One of its particular areas of focus is the 3D RADAR scanner for contactless telemedicine examinations and AI-based diagnostics. ADBInno works in cooperation with FEMTO-ST of the University of Franche-Comté.

About the Institute of High-Frequency Technology at Hamburg University of Technology
Prof. Alexander Kölpin, head of the Institute of High-Frequency Technology at Hamburg University of Technology, has been conducting research in the field of medical RADAR systems for medical and industrial applications for over a decade. The institute covers the entire system, from the antenna and high-frequency circuit to analogue and digital signal processing and signal analysis with machine learning methods.

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About BioRegio STERN Management GmbH:
BioRegio STERN Management GmbH promotes economic development in the life sciences industry, helping to strengthen the region as a business location by supporting innovations and start-up companies in the public interest. It is the main point of contact for company founders and entrepreneurs in the Stuttgart and Neckar-Alb regions, including the cities of Tübingen and Reutlingen.
The STERN BioRegion is one of the largest and most successful bioregions in Germany. Its unique selling points include a mix of biotech and medtech companies that is outstanding in Germany and regional clusters in the fields of automation technology and mechanical and plant engineering.

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