
PHD STUDENT IN THE DOCTORAL SCHOOL – CALL FOR APPLICATIONS

Position: PhD student in Biomedical Engineering

Unit of the project realization: Faculty of Science and Technology – University of Silesia in Katowice

Unit realizing the PhD student education: Doctoral School at the University of Silesia in Katowice in cooperation with the European University consortium – Transform4Europe

The research undertaken by the successful applicant will be carried out within the framework of the project “Early detection of side spine curvature in children by using thermovision”.

Duration of the scholarship: 48 months

Scholarship amount: 3466,90 PLN / 5340,90 PLN (after mid-term evaluation)

PhD supervisor: prof. dr hab. inż. Armand Cholewka

Project description:

The project aims to assess the usefulness of the combination of pre-cooling the body and infrared thermography in the diagnosis of spinal curvatures in children and adolescents. The main goal of the research is to develop a screening diagnostic methodology using a combination of the above-mentioned techniques. Healthy children with proper body posture, those with an increased BMI as a risk factor for postural defects and children with body posture abnormalities including scoliosis will be examined. The patients' bodies will be cooled in a cryogenic chamber adapted to the application of air blowing. The process of cooling the body will be carried out using cold air at 0 °C. Patients will stay in the cooling cabin for only a few minutes. Thermal imaging will be compared and correlated with the X-rays and orthopedic examinations used as confirmatory diagnostic techniques. In the proposed screening technique, thermovision combined with body cooling, it is possible to observe clear changes in the temperature gradient on the surface of the patient's back on the thermographs. The proposed association method could be a kind of diagnostic preventive method, because it can give a chance to determine, with a certain probability, the possibility of curvature of the spine. The combination of infrared thermography and pre-cooling of the body has a chance to become safe for patients at developmental age, an innovative and quick screening method in the near future.

The project will be implemented as an international PhD in cooperation with partner universities within the consortium “Transform4Europe”. Part of education and research will be realized in one of the partner European universities.

Requirements:

1. MSc in Physics, Biomedical Engineering or related.
2. Fluency in English (both spoken and written).

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3. Very good knowledge of thermal imaging technique in physiotherapy, medical diagnosis and evaluation of different therapy techniques and medical physics field.

Required documents:

1. A written outline of a research proposal (up to 4500 characters) including methodology, research goals, and bibliography.
2. A list of the candidate's scientific publications.
3. A CV focused on research and academic experience.
4. A copy of the MSc diploma.
5. One letter of recommendation.

Candidates should register in the IRK system (<https://irk2.us.edu.pl/>), select "Admission to the Doctoral School at the University of Silesia in Katowice – ADMISSION FOR PROJECTS," and choose a suitable project title.

Documents should be delivered until **31.05.2024** through the IRK system.

In case of any questions before submitting the formal application, please contact the Doctoral School (szkola.doktorska@us.edu.pl).

Documents will be evaluated by an interview panel led by the project leader. Admission will be carried out in English. Interviews will be organized online. The final decision will be sent to the candidates via the IRK system until **17.06.2024**.