TRANSFORM 4EUROPE   University of Silesia in Katowice
                          Poland   Co-funded by
                                                          the European Union

PHD STUDENT IN THE DOCTORAL SCHOOL – CALL FOR APPLICATIONS

Position: PhD student in Computer Science

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 "**Procedural generation of artistic patterns**".

Duration of the scholarship: 48 months

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

PhD supervisor: dr hab. Krzysztof Gdawiec, prof. UŚ

Project description:

One of the most elusive goals in computer-aided design is artistic design and pattern generation. Pattern generation involves diverse aspects: analysis, creativity and development. A designer has to deal with all of these aspects to obtain an interesting pattern, which could later be used in jewellery design, carpet design, texture, etc. Usually, most of the work during the design stage is carried out by a designer manually, especially in cases in which the designed pattern should contain some unique, unrepeatable artistic features. Therefore, developing methods (e.g. automatic, semi-automatic) that will assist pattern generation and make the whole process easier is highly useful. The topic's main aim is to develop new procedural methods that will assist the designer in the creation process of various kinds of aesthetic patterns. The methods will be based on various mathematical concepts such as fractals, hyperbolic geometry, plane tilings, symmetry groups, etc. Because the topic lies in the intersection of computer science, mathematics, and arts, it will require good computer graphics programming skills and knowledge of computer graphics and mathematics.

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 Computer Science or related.
2. Fluency in English (both spoken and written).
3. Very good knowledge of (1) computer graphics, (2) graphics programming in one of the following graphics APIs: OpenGL, Vulkan, Direct3D, and (3) basics of algebra (group theory, symmetries, complex and hypercomplex numbers, etc.)

Required documents:

University of Silesia in Katowice
Doctoral School
Bankowa 14, 40-007 Katowice
tel.: 48 32 359 23 92, e-mail: szkola.doktorska@us.edu.pl

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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 MA diploma (or a declaration of obtaining a diploma no later than September 10, 2024).
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**.

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