Senior and junior supervisor research topic application for the IPhD Programme in Regional Development, 2023-24 year

Name/position of the senior supervisor: Ferenc Kruzslicz, associate professor
Highest academic degree: habil. Phd.

Name/position of the junior supervisor: Dr. Hornyák Miklós, assistant professor
Highest academic degree: PhD

Title of the suggested research topic: Transfer learning in economics

The international relevance, importance, and timely of the research topic:
Transfer learning is a machine learning approach to adapt previously acquired knowledge to new problems where the development of native models are impossible or too expensive. In a constantly changing economic environment automatic decision making model must be not only continuously monitored about their performance, but also updated and adapted the changes. Transfer learning is most useful when there an trained model exists, optimized for a larger population (region) which must be justified for a smaller population having not enough data to develop an independent model for itself. Transfer learning originates from text mining, but because it is a general-purpose approach, it also enables creating novel economic models.

Which UP-FBE research could the PhD candidate join?

Possible research directions:
- There are many open questions regarding transfer learning: how to measure its effectiveness, how to prevent the phenomenon of negative or even overfitting, or how much environmental changes it can follow.
- By expanding the range of economic applications of this methodology, doctoral students can create special models, develop transfer learning strategies or even develop transfer learning algorithms.

The supervisor's expertise and experience in the research field

The most important publications in the research field over the last five years
- Kruzslicz, Ferenc ; Kovács, Balázs ; Hornyák, Miklós: Comparative cluster labelling involving external text sources, Statisztikai szemle 95: Klsz 21 pp. 101-127. , 27 p. (2017)

- Hornyák, Miklós ; Kruzslicz, Ferenc: Egyetemi ökoszisztéma vizsgálata big data környezetben, Marketing és menedzsment 50 : 3-4 pp. 19-32. , 14 p. (2016)