ADMISSION TO DOCTORAL STUDIES Session September 2025

Field of doctoral studies: Systems Engineering
Doctoral supervisor: Prof. dr. ing. ITU Lucian Mihai

TOPICS FOR THE ADMISSION TO DOCTORAL STUDIES

TOPIC 1: *Advanced Imaging and AI for Non-Invasive Cardiovascular Diagnostics*
Recommended bibliography: 1. Wehbe, Ramsey M., et al. "Deep learning for cardiovascular imaging: A review." *JAMA cardiology* 8.11 (2023): 1089-1098. 2. Fortuni, Federico, et al. "Advancements and applications of artificial intelligence in cardiovascular imaging: a comprehensive review." *European Heart Journal-Imaging Methods and Practice* 2.4 (2024): qyae136. 3. Lin, Andrew, et al. "Artificial intelligence in cardiovascular imaging: enhancing image analysis and risk stratification." *BJR open* 5.1 (2023): 20220021.
☐ Scientific Doctorate (full-time only) ☐ Professional Doctorate – in the fields of Music and Science of sport and physical education (full-time or part-time)
☐ without tuition fee (state budget funded) ☐ with tuition fee or with funding from other sources than the state budget

TOPIC 2: *Advanced Calibration Techniques for Uncertainty in AI Models*
Recommended bibliography: 1. Wang, Cheng. "Calibration in deep learning: A survey of the state-of-the-art." *arXiv preprint arXiv:2308.01222* (2023). 2. Zou, Ke, et al. "A review of uncertainty estimation and its application in medical imaging." *Meta-Radiology* 1.1 (2023): 100003. 3. Seoni, Silvia, et al. "Application of uncertainty quantification to artificial intelligence in healthcare: A review of last decade (2013–2023)." *Computers in Biology and Medicine* 165 (2023): 107441.
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TOPIC 3: *Multimodal LLMs for Diagnostics and Clinical Decision Support*
Recommended bibliography: 1. Buess, Lukas, et al. "From large language models to multimodal AI: A scoping review on the potential of generative AI in medicine." *arXiv preprint arXiv:2502.09242* (2025). 2. Niu, Qian, et al. "From text to multimodality: Exploring the evolution and impact of large language models in medical practice." *arXiv preprint arXiv:2410.01812* (2024). 3. Nazi, Zabir Al, and Wei Peng. "Large language models in healthcare and medical domain: A review." *Informatics*. Vol. 11. No. 3. MDPI, 2024.
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Doctoral supervisor,

Prof. ITU Lucian Mihai, PhD

Coordinator of the field of doctoral studies,

Prof. SUCIU Constantin, PhD