

Field of doctoral studies: Systems Engineering

Doctoral supervisor: Prof. dr. ing. ITU Lucian Mihai

TOPICS FOR THE ADMISSION TO DOCTORAL STUDIES

<p>TOPIC 1: <i>Advanced Imaging and AI for Non-Invasive Cardiovascular Diagnostics</i></p>
<p>Recommended bibliography:</p> <ol style="list-style-type: none"> <li>1. Wehbe, Ramsey M., et al. "Deep learning for cardiovascular imaging: A review." <i>JAMA cardiology</i> 8.11 (2023): 1089-1098.</li> <li>2. Fortuni, Federico, et al. "Advancements and applications of artificial intelligence in cardiovascular imaging: a comprehensive review." <i>European Heart Journal-Imaging Methods and Practice</i> 2.4 (2024): qyae136.</li> <li>3. Lin, Andrew, et al. "Artificial intelligence in cardiovascular imaging: enhancing image analysis and risk stratification." <i>BJR open</i> 5.1 (2023): 20220021.</li> </ol>
<p><input checked="" type="checkbox"/> Scientific Doctorate <input type="checkbox"/> Professional Doctorate</p>
<p><input checked="" type="checkbox"/> without tuition fee (state budget funded) <input checked="" type="checkbox"/> with tuition fee or with funding from other sources than the state budget</p>

<p>TOPIC 2: <i>Multi-Scale Physics-Based Modelling of Thrombus Dynamics: From Platelet Mechanics to Circulatory-Level Thrombogenesis</i></p>
<p>Recommended bibliography:</p> <ol style="list-style-type: none"> <li>1. Yazdani, A., Zhang, P., Sheriff, J., Slepian, M. J., Deng, Y., &amp; Bluestein, D. (2020). Multiscale modeling of blood flow-mediated platelet thrombosis. In <i>Handbook of materials modeling: applications: current and emerging materials</i> (pp. 2667-2698). Cham: Springer International Publishing.</li> <li>2. Shankar, K. N., Diamond, S. L., &amp; Sinno, T. (2023). Development of a parallel multiscale 3D model for thrombus growth under flow. <i>Frontiers in Physics</i>, 11, 1256462.</li> <li>3. Zhu, Y., Zhang, P., Han, C., Cong, G., &amp; Deng, Y. (2021, June). Enabling AI-accelerated multiscale modeling of thrombogenesis at millisecond and molecular resolutions on supercomputers. In <i>International Conference on High Performance Computing</i> (pp. 237-254). Cham: Springer International Publishing.</li> </ol>
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TOPIC 3: *Multi-Modal Foundational AI Modelling of Thrombosis Through Integration of Physics-Based, Imaging, and Clinical Data*

Recommended bibliography:

1. Gutierrez, N. G., Mukherjee, D., & Bark Jr, D. (2024). Decoding thrombosis through code: a review of computational models. *Journal of Thrombosis and Haemostasis*, 22(1), 35-47.
2. Crisan, D. N., Cut, T. G., Herlo, L. F., Ivanovic, N., Herlo, A., Alexandrescu, L., ... & Dumache, R. (2026). Artificial Intelligence in Venous Thromboembolism Prevention: A Narrative Review of Machine Learning, Deep Learning, and Natural Language Processing. *Journal of Cardiovascular Development and Disease*, 13(3), 119.
3. Ahmadi, M., Biswas, D., Lin, M., Vrionis, F. D., Hashemi, J., & Tang, Y. (2025). Physics-informed machine learning for advancing computational medical imaging: integrating data-driven approaches with fundamental physical principles. *Artificial Intelligence Review*, 58(10), 297.

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Doctoral supervisor,

Prof. ITU Lucian Mihai, PhD

Coordinator of the field of doctoral studies,

Prof. SUCIU Constantin, PhD