![Transilvania University of Brașov — Interdisciplinary Doctoral School logo]

ADMISSION TO DOCTORAL STUDIES   Session September 2024

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

TOPICS FOR THE ADMISSION TO DOCTORAL STUDIES

TOPIC 1: *Deep Neural Networks for Automated Assessment and Diagnosis of Cardiovascular Pathologies*

Recommended bibliography:
  1. Goodfellow, I. et al. *Deep Learning. Adaptive Computation and Machine Learning Series*, MIT Press, 2016.
  2. Chollet, F. *Deep Learning with Python*, Manning, 2017.
  3. Anne G. Osborn et al. *Osborn's Brain: Imaging, Pathology and Anatomy,* Elsevier, 2017.

☒ 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: *Uncertainty Quantification in Deep Learning Based Classification and Regression - Application to Medical Data and Images*

Recommended bibliography:
  1. Goodfellow, I. et al. *Deep Learning. Adaptive Computation and Machine Learning Series*, MIT Press, 2016.
  2. Longlong, J. et al. *Self-supervised Visual Feature Learning with Deep Neural Networks*: *A Survey*, https://arxiv.org/abs/1902.06162, 2019.
  3. Abdar, M. et al. *A Review of Uncertainty Quantification in Deep Learning*: *Techniques, Applications and Challenges*, Information Fusion, Volume 76, December 2021, Pages 243-297.

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TOPIC 3: *Automated Medical Language Understanding Through Unsupervised Learning*

Recommended bibliography:
  1. Devlin, J. et al. *Bert*: *Pre-training of Deep Bidirectional Transformers for Language Understanding*, arXiv preprint arXiv:1810.04805, 2018.
  2. Yang, Z. et al. *Xlnet*: *Generalized Autoregressive Pretraining for Language Understanding*, Advances in Neural Information Processing Systems, Volume 32, 2019.
  3. Radford, A. et al. *Language Models are Unsupervised Multitask Learners*, OpenAI blog

1.8, Volume 9, 2019.

4. Dong, X. et al. *A Multiclass Classification Method Based on Deep Learning for Named Entity Recognition in Electronic Medical Records*, 2016 New York Scientific Data Summit (NYSDS), IEEE, 2016.

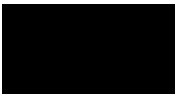☒ Scientific Doctorate (full-time only)
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Doctoral supervisor,

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Coordinator of the field of doctoral studies,

Prof. MOLDOVEANU Florin Dumitru, PhD