



ADMISSION TO DOCTORAL STUDIES

Session September 2022

Field of doctoral studies: Systems Engineering

Doctoral supervisor: Prof. ITU Lucian Mihai, PhD

TOPICS FOR THE ADMISSION TO DOCTORAL STUDIES

TOPIC 1: *Uncertainty Quantification in Deep Learning Based Classification and Regression - Application to Medical Data and Images*

Recommended references:

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.

TOPIC 2: *Deep Neural Networks for Automated Assessment and Diagnosis of Coronary Artery Disease from Medical Images*

Recommended references:

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. Zipes, D.P. et al. *Braunwald's Heart Disease. A Textbook of Cardiovascular Medicine*, Elsevier, 2019.

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

Recommended references:

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.

Doctoral supervisor,

Prof. ITU Lucian Mihai, PhD



Coordinator of the field of doctoral studies,

Prof. MOLDOVEANU Florin Dumitru, PhD

