



Universitatea
Transilvania
din Braşov

ADMITERE DOCTORAT 2020-2021

Sesiunea Septembrie 2020

Şcoala Doctorală Interdisciplinară (SDI)

Domeniul de doctorat:

Ingineria Sistemelor

Conducător doctorat:

Prof. univ. dr. ing. ITU Lucian Mihai

TEME (TEMATICĂ) PENTRU CONCURS

TEMA 1: *Optimizarea parametrilor și modelarea personalizată a sistemelor biologice*

Bibliografie recomandată:

1. Markus W. Covert, *Fundamentals of Systems Biology: From Synthetic Circuits to Whole-cell Models*, CRC Press, 2014.
2. Brian P. Ingalls, *Mathematical Modeling in Systems Biology: An Introduction*, MIT Press, 2013.
3. Fabian Fröhlich et al., *Efficient Parameter Estimation Enables the Prediction of Drug Response Using a Mechanistic Pan-Cancer Pathway Model*, *Cell Systems*, Vol. 7(6), pp. 567-579, 2018.

TEMA 2: *Tehnici bazate pe inteligență artificială pentru generarea de date medicale sintetice*

Bibliografie recomandată:

1. Ian Goodfellow et al., *Deep Learning*, *Adaptive Computation and Machine Learning series*, MIT Press, 2016.
2. Longlong Jing et al., *Self-supervised Visual Feature Learning with Deep Neural Networks: A Survey*, <https://arxiv.org/abs/1902.06162>, 2019.
3. Francois Chollet, *Deep Learning with Python*, Manning, 2017.

TEMA 3: *Rețele neurale adânci pentru evaluarea și diagnosticarea automată a cardiopatiei ischemice din imagini medicale*

Bibliografie recomandată:

1. Ian Goodfellow et al., *Deep Learning*, *Adaptive Computation and Machine Learning series*, MIT Press, 2016.
2. Francois Chollet, *Deep Learning with Python*, Manning, 2017.
3. Douglas P. Zipes et al., *Braunwald's Heart Disease: A Textbook of Cardiovascular Medicine*, Elsevier, 2019

Conducător doctorat:

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Transilvania
University
of Brasov

ADMISSION TO DOCTORAL STUDIES

2020-2021

Session September 2020

Interdisciplinary Doctoral School
(SDI)

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

TOPICS FOR THE ADMISSION TO DOCTORAL STUDIES

TOPIC 1: *Parameter optimization and personalized systems biology modeling*

Recommended references:

1. Markus W. Covert, *Fundamentals of Systems Biology: From Synthetic Circuits to Whole-cell Models*, CRC Press, 2014.
2. Brian P. Ingalls, *Mathematical Modeling in Systems Biology: An Introduction*, MIT Press, 2013.
3. Fabian Fröhlich et al., *Efficient Parameter Estimation Enables the Prediction of Drug Response Using a Mechanistic Pan-Cancer Pathway Model*, *Cell Systems*, Vol. 7(6), pp. 567-579, 2018.

TOPIC 2: *Artificial intelligence based methods for generating synthetic medical data*

Recommended references:

1. Ian Goodfellow et al., *Deep Learning*, Adaptive Computation and Machine Learning series, MIT Press, 2016.
2. Longlong Jing et al., *Self-supervised Visual Feature Learning with Deep Neural Networks: A Survey*, <https://arxiv.org/abs/1902.06162>, 2019.
3. Francois Chollet, *Deep Learning with Python*, Manning, 2017.

TOPIC 3: *Deep neural networks for the automated assessment and diagnosis of coronary artery disease from medical images*

Bibliografie recomandată:

1. Ian Goodfellow et al., *Deep Learning*, Adaptive Computation and Machine Learning series, MIT Press, 2016.
2. Francois Chollet, *Deep Learning with Python*, Manning, 2017.
3. Douglas P. Zipes et al., *Braunwald's Heart Disease: A Textbook of Cardiovascular Medicine*, Elsevier, 2019

PhD supervisor:

Prof. univ. dr. ing. ITU Lucian Mihai