



### Teme pentru proiecte de diplomă și disertație

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Nr. crt.	Titlul temei	Scurta descriere	Cerințe / Cunoștințe necesare	Nivel (licenta/master)
1	Multi-Input-Multi-Output control of general anesthesia	<ul style="list-style-type: none"><li>- Simulation based on an anesthesia benchmark system built in Simulink</li><li>- 6 inputs and 6 outputs</li><li>- Integer order MIMO control</li></ul> Difficulty: <b>medium+</b>	<ul style="list-style-type: none"><li>- System identification</li><li>- Control engineering</li><li>- Good knowledge of Matlab/Simulink</li></ul>	Licenta
2	Multi-Input-Multi-Output fractional order control of general anesthesia	<ul style="list-style-type: none"><li>- Simulation based on an anesthesia benchmark system built in Simulink</li><li>- 6 inputs and 6 outputs</li><li>- Fractional order MIMO control</li></ul> Difficulty: <b>hard</b>	<ul style="list-style-type: none"><li>- System identification</li><li>- Control engineering</li><li>- Good knowledge of Matlab/Simulink</li></ul>	Licenta
3	Event-based Multi-Input-Multi-Output fractional order control of general anesthesia	<ul style="list-style-type: none"><li>- Simulation based on an anesthesia benchmark system built in Simulink</li><li>- 6 inputs and 6 outputs</li></ul>	<ul style="list-style-type: none"><li>- System identification</li><li>- Control engineering</li></ul>	Licenta

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		<ul style="list-style-type: none"> <li>- Fractional order event-based MIMO control</li> </ul> <p>Difficulty: <b>hard+</b></p>	<ul style="list-style-type: none"> <li>- Good knowledge of Matlab/Simulink</li> </ul>	
4	System identification of a liquid steel manufacturing plant	<ul style="list-style-type: none"> <li>- <i>Simulation</i></li> <li>- based on experimental data acquired from a continuous stirrer</li> <li>- the liquid steel is driven through the caster using a variable magnetic field</li> <li>- the developed model should connect the applied current to the EMA device and the speed of the steel particles</li> </ul> <p>Difficulty: <b>hard</b></p>	<ul style="list-style-type: none"> <li>- System identification</li> <li>- Good knowledge of Matlab/Simulink</li> </ul>	Licenta
5	Advanced process control of a liquid steel manufacturing plant	<ul style="list-style-type: none"> <li>- <i>Simulation</i></li> <li>- based on a fractional order model of the plant</li> <li>- the developed controller should control the speed of the steel particles</li> </ul> <p>Difficulty: <b>hard</b></p>	<ul style="list-style-type: none"> <li>- System identification</li> <li>- Control engineering</li> <li>- Good knowledge of Matlab/Simulink</li> </ul>	Licenta
6	Fractional order controller tuning using Machine Learning	<ul style="list-style-type: none"> <li>- theoretical thesis</li> <li>- in depth state of the art analysis</li> <li>- testing and validating existing methodologies on various processes (first order, second order and time delay systems)</li> </ul>	<ul style="list-style-type: none"> <li>- System identification</li> <li>- Good knowledge of Matlab/Simulink</li> </ul>	Licenta

Nr. crt.	Titlul temei	Scurta descriere	Cerințe / Cunoștințe necesare	Nivel (licenta/ master)
		Difficulty: <b>medium+</b>	- Desire to learn AI	
7	Fractional order controller tuning using Deep Learning	<ul style="list-style-type: none"> <li>- theoretical thesis</li> <li>- in depth state of the art analysis</li> <li>- testing and validating existing methodologies on various processes (first order, second order and time delay systems)</li> </ul> Difficulty: <b>medium+</b>	<ul style="list-style-type: none"> <li>- System identification</li> <li>- Control engineering</li> <li>- Good knowledge of Matlab/Simulink</li> <li>- Desire to learn AI</li> </ul>	Licenta
8	Fractional order system identification using Machine Learning	<ul style="list-style-type: none"> <li>- theoretical thesis</li> <li>- in depth state of the art analysis</li> <li>- testing and validation of existing methodologies on various processes</li> <li>- comparison with classical identification techniques</li> </ul> Difficulty: <b>hard</b>	<ul style="list-style-type: none"> <li>- System identification</li> <li>- Control engineering</li> <li>- Good knowledge of Matlab/Simulink</li> <li>- Desire to learn AI</li> </ul>	Licenta
9	Fractional order model predictive control of a Vertical Take-Off and Landing Platform	<ul style="list-style-type: none"> <li>- <b>Experimental</b> thesis</li> <li>- Identification based on real-life VTOL data</li> <li>- Controllers should be validated on the experimental platform</li> </ul> Difficulty: <b>hard</b>	<ul style="list-style-type: none"> <li>- System identification</li> <li>- Control engineering</li> <li>- Good knowledge of Matlab/Simulink</li> </ul>	Licenta
10	Fractional order model predictive control of the hemodynamic system	- Simulation based on an anesthesia benchmark system built in Simulink	- Control engineering	Master

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		<ul style="list-style-type: none"><li>- 2 inputs and 2 outputs</li><li>- Fractional order model predictive control of the MIMO process</li></ul> Difficulty: <b>hard</b>	- Good knowledge of Matlab/Simulink	