

	FORM FOR PROPOSING A TOPIC IN THE SECOND CYCLE OF STUDIES	Oznaka	SAO-FENS.4.24.0-ENG
		Datum usvajanja	
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		Stranica	2/2

Department	Electrical and Electronics Engineering
Master thesis title:	Experimental platform for rapid prototyping of different algorithms for DC motor control using LabVIEW
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Thesis background:	<p>Taking into consideration the need for convenient environment used for testing different controlling algorithms, a new environment will be developed. Algorithm development and implementation will be done using NI LabVIEW Professional Development System. Main purpose of the new environment will be testing control algorithms on real model. Real model, in this case DC motor, will be connected to NI 9402 data acquisition card. NI 9402 is a powerful tool that allows us to configure the direction of the channels for input or output on a per-channel basis, with 55ns update rate. NI LabVIEW development system is allows us to use single software for a control of a DC motor for multiple purposes. NI 9402 DAQ along with H-bridge acting as the sub-controller and an encoder as sensor will constitute the development environment. Consequently, the new environment will provide abilities to test control algorithms in convenient manner, providing outputs from DC motors in form of data which can be further analyzed providing answer to question which controlling strategy is better to use.</p> <p>Main task of this thesis is development of a platform which enables rapid prototyping of different control algorithms. In addition to research and development, this experimental platform will be of great significance for educational purposes. All experimental results will be presented on conferences.</p>
Thesis objective:	<p>Main objective of this thesis is development of a modular experimental platform which can be used for rapid prototyping and testing different control algorithms for DC motors using NI 9024 data acquisition card and LabVIEW development environment.</p>

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Literature:	<ol style="list-style-type: none"> 1. B. Siciliano, „Robotics. Modelling, Planning and Control“, Springer 2009. 2. Mark W. Spong, „Robot Dynamics and Control“, 2004. 3. J.J. Craig, „Introduction to Robotics: Mechanics and Control“, 3rd ed., Pearson Prentice Hall, Upper Saddle River, NJ, 2004. 4. R. Siegwart, I.R. Nourbakhsh, „Introduction to Autonomous Mobile Robots“, MIT Press, Cambridge, MA, 2004 5. F. Chaumette, “Image moments: A general and useful set of features for visual servoing,” <i>IEEE Transactions on Robotics and Automation</i>, vol. 21, pp. 1116-1127, 2005. 6. D. Jokić, S. Lubura, M. Ristović, S. Stankovski, V. Rajs, and H. Šiljak, “What’s in the Box: Design of an Open Didactic Robot Environment,” <i>Electronics</i>, vol. 9, no. 12, p. 2090, Dec. 2020. 7. D. Jokić, S. Lubura, V. Rajs, M. Bodić, and H. Šiljak, “Two Open Solutions for Industrial Robot Control: The Case of PUMA 560,” <i>Electronics</i>, vol. 9, no. 6, p. 972, Jun. 2020
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