

## FRAMEWORK PROGRAMME OF EARLY STAGE RESEARCHER TRAINING<sup>1</sup>

### 1. BASIC DATA

Mentor's name and surname	<b>Aleš Hace</b>	Mentor's register number at <a href="#">ARIS (SICRIS)</a> :	<b>15373</b>
Mentor's e-mail:	ales.hace@um.si	Mentor's tel. no.:	<b>02 220 7301</b>
Research programme (RP) leader's name and surname:	Mitja Truntič	RP leader's register number at <a href="#">ARIS (SICRIS)</a> :	<b>25427</b>
Title of research programme:	Mehatronske sistemi	RP's Register number at <a href="#">ARIS (SICRIS)</a> :	<b>P2-0028</b>
Research organisation (RO) of University of Maribor, where training shall be conducted:	FERI	RO Register number at <a href="#">ARIS (SICRIS)</a> :	<b>796</b>
Research field according to <a href="#">ARIS classification</a> :	2.06, 2.10	Research field according to Ortelius classification (EURAXESS)	<b>15.11, 37.31</b>

### 2. DEFINITION OF RESEARCH PROBLEM AND GOALS OF DOCTORAL RESEARCH<sup>2</sup>

Starting point of research task of the early stage researcher and its position in the research programme, where the mentor is included, work hypothesis, research goals and foreseen result with emphasis on an original contribution to science:

The training of the young researcher will take place at the doctoral school of the Faculty of Electrical Engineering, Computer Science and Informatics. Research will be in the field of robotics towards new and improved approaches to robot-human interaction and their flexibility in practical applications. Collaborative robots represent a relatively new paradigm in the design of robotization of production processes, but also a research challenge, as practical robotic systems of this kind still remain relatively primitive, and effective applications of collaborative robotics are consequently severely lacking. Therefore, we want to direct the young researcher to the field of robotics using advanced collaborative robotic systems, which may include haptic interaction, advanced visual systems and augmented reality, and in the future, artificial intelligence as well, to improve autonomous performance, flexibility, learning and user experience. We anticipate that the research will contribute to the advanced robotization of new

<sup>1</sup> Term early stage researcher (ESR) is written in male form and used as neutral for women and men.

<sup>2</sup> Research and study programme of training have to harmonise with contents of the research programme, where the mentor is a member.

areas of production processes, which we want to confirm after theoretical study and computer simulations with a practical demonstration in a laboratory case. The position of Young Researcher will be placed in the Mechatronic Systems program (P2-0028). The work will be carried out in accordance with the guidelines and objectives of the program group in the segment of industrial robots, which represent typical mechatronic systems.

### 3. STUDY PROGRAMME

Foreseen study programme, to which early stage researcher shall be enrolled in academic year 2024/2025:

Electrical Engineering

### 4. DESCRIPTION OF WORK AND TASKS

Research work

### 5. REQUESTED LEVEL OF EDUCATION

8., master degree

### 6. REQUESTED FIELD OF EDUCATION

electrical engineering,  
mechatronics,  
computer science,  
mechanical engineering

### 7. KLASIUS SRV

18202, Education leading to doctorate of science  
(third Bologna cycle)/Doctorate of science

### 8. KLASIUS P

0714, Electronics and automation  
072, Manufacturing and processing

9. REQUESTED KNOWLEDGE

robotics, math, programming

10. REQUESTED SPECIAL REQUIREMENTS

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11. REQUESTED LANGUAGES

English

12. REQUESTED WORK EXPERIENCE

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13. FORESEEN POSTDOCTORAL TRAINING

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Mentor's signature:

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Research programme leader's signature:

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Name and surname of Dean or  
authorised person<sup>3</sup>:

prof. dr. Gorazd Štumberger

po pooblastilu prof. dr. Marjan Mernik

Signature of dean or authorised person:

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Place and date:

Maribor

5. 03. 2024

<sup>3</sup> The training program is signed by the dean of the member where the ESR's employment and training will take place.

Stamp: