



The project is financed by the Polish National Agency for Academic Exchange

Białystok, March 5, 2019

**Recruitment rules of the participants
of the National Agency for Academic Exchange NAWA
APM - Academic International Partnerships project
at the Faculty of Mechanical Engineering, Białystok University of Technology
in 2019**

Taks No. 1

Research and development activities in cooperation with the University of Patras (UP).

Subtask

Academic exchange of one researcher from the Faculty of Mechanical Engineering, Białystok University of Technology (FME BUT) to the University of Patras (UP) and one researcher from the University of Patras (UP) to the Faculty of Mechanical Engineering, Białystok University of Technology (FME BUT) in 2019.

Dates of academic exchange: May / June 2019.

Period of stay: 6 days.

Task description

The subject of joint research and development activities between FME BUT and UP will be the **determination of the optimal robotic task location and optimal trajectory of universal robot motion: application and experimental verification of the UR5 manipulator.**

The planned task will be to determine the optimal robotic task location and optimal trajectory, carried out by a universal robot in the process of performing a pick-and-place technological task and the trajectory following task. These problems are of great practical importance as they can reduce costs and increase production efficiency, as well as reduce the time needed to perform technological tasks, carried out by universal robots. Particular attention will be paid to optimizing the trajectory of the robot's working tip, taking into account such criteria as: operation time, energy consumption, positioning accuracy, smoothness of the end effector's trajectory, as well as robot and / or workspace limitations such as maximum speeds and accelerations segments, avoiding obstacles or process restrictions.

The planned task will use the results obtained in the framework of previous cooperation between FME BUT and UP. These results were already presented at the international RAAD 2018 conference, which was held in Patras in June 2018. The planned task will be implemented in two stages: 1) conducting simulation tests, 2) conducting experimental research in laboratory conditions. These works will be carried out in robotics laboratories of UP and FME BUT.

In the frames of the task, **the academic exchange of one researcher from FME BUT to UP and one researcher from UP to FME BUT** is planned in 2019, in order to conduct the



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planned simulation and experimental tests. The planned dates of the exchange are: **May / June 2019**, the period of stay: **6 days**.

Project co-financing from the National Agency for Academic Exchange covers **travel, insurance and diet costs** for outgoing persons (from both FME BUT and UP) as well as **printing costs of scientific publications** created as a result of research and development work, up to the amount of task No. 1 budget.

Recruitment rules

1. Recruitment of researchers to the APM project, task No. 1, subtask "Academic exchange of one researcher from the Faculty of Mechanical Engineering, Bialystok University of Technology (FME BUT) to the University of Patras (UP) and one researcher from the University of Patras (UP) to the Faculty of Mechanical Engineering, Bialystok University of Technology (FME BUT) in 2019", will be preceded by the information campaign, implemented by email announcement sent to the scientific staff of FME BUT and to the academic staff of UP. Information on the recruitment for the project will also be posted on the FME BUT website.
2. Candidates submit the application forms (the template is given in Annexes 1 and 2). The completed and signed forms are submitted to the Faculty Coordinator of the project, **Prof. Zbigniew Kulesza**. The candidates from FME BUT submit their forms in room **M-113**, FME BUT building or via email to: **z.kulesza@pb.edu.pl**. The candidates from UP submit the scanned copies of their forms via e-mail to the following address: **z.kulesza@pb.edu.pl**
3. The recruitment will continue until **March 21, 2019, 12.00 am**. Immediately after its completion, an assessment of the submitted applications, as well as a ranking list, a list of qualified candidates (one person from FME BUT and one person from UP) and a reserve list of candidates will be prepared. The recruitment results will be sent via email to the candidates who submitted their application forms.
4. Applications will be evaluated by the Faculty Committee, composed of:
 - 1) Prof. Zbigniew Kulesza - chairman
 - 2) Prof. Małgorzata Grądzka-Dahlke
 - 3) Prof. Oleksandr Jewtuszenko
 - 4) Dr. Jarosław Czaban
5. The key criteria for the evaluation of the candidates will be:
 - a) compliance of the candidate's research topics with the topics of task No. 1, namely with the **determination of the optimal robotic task location and optimal trajectory of universal robot motion: application and experimental verification of the UR5 manipulator**.
Number of points: from 0 to 5



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- b) previous involvement of the candidate in research and development cooperation between FME BUT and UP,
Number of points: from 0 to 3
 - c) current documented scientific achievements of the candidate,
Number of points: from 0 to 3
6. The complete set of documents should be accomplished with a CV of the candidate in English and a research program at the host university.
 7. The final decision on accepting or not accepting a candidate to participate in the project will be taken by the receiving party.
 8. Immediately after going back to the host university, the outgoing person prepares a report on the tests carried out, submitted to the Faculty Coordinator of the project.
 9. On the basis of the results of the research, the researchers participating in the project (from FME BUT and from UP), by the end of 2019, will prepare a joint scientific paper, submitted for publication in the journal from the JCR list. In the case of accepting an article for printing, its publication may be co-financed under the funds planned in task No. 1 for the year 2019.
 10. The recruitment procedure takes into account and obliges the persons responsible for the implementation of the project to comply with the principles of personal data protection.
 11. Participants of the NAWA APM - Academic International Partnerships project are obliged to follow the rules of the Project Regulations, available at <https://pb.edu.pl/bwm/projekty-nawa/apm/dokumenty/>