INTRANET - Applications

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1. Personal Details
Applicant's Personal Details

* Surname/Family Name:	Alyukov
* Forenames/Given Names:	Alexander
* Date of Birth: (day/month/year)	24/02/1992 (day/month/year)
* Place of Birth:	Chelyabinsk, Russia
* Gender:	Male
* Nationality:	Russia
* IC/Passport : (at least one)	IC no. : Passport no. : 712080231

* Have you applied at the same time to other financial support (Project funded by the European Union or other)?

No

* Are you also applying to ERANET-MUNDUS?

No

Permanent address

* Street and number:	apt. 21, 78A, Lenina prospect
* Postcode:	454080
* City:	Chelyabinsk
* Country:	Russia

Contact Details

* Telephone:	+79226982753
* Primary e-mail:	alyukovalexandr@gmail.com
Alternative Email:	alyukovalexandr12@yandex.ru

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2. Home Institution
Details of the Home Institution
Proof of HEI's support to be provided

* Official Name of the Higher Education Institution:	SUSU - South Ural State University
* Country:	RU Russia
Applicant's Student Number:	

Organization responsible for the Doctorate at the HEI

* Faculty/School:	Automobile and Tractor Engineering
* Department:	Automobiles and Automobile service
* Name of Academic Supervisor:	Anatoly Dubrovsky
* Position of the academic supervisor:	Professor
* Academic Supervisor's Email:	duanf@mail.ru
(Max. 1500 characters)	Doctor of Technical Sciences, professor, academician of the Russian Academy of Transport, chairman of the Dissertation Defence Board.

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3. Academic Qualifications
Indicate the main academic qualifications achieved, starting by the most recent ones.
Proof of all academic qualifications must be provided; please **upload** a copy of the official documents in **section 10**.

(a)

* Academic degree awarded:	Master
* Title:	Specialist's degree in the field of Control and Computer Science in Engineering Systems
* Institution:	South Ural State University
* Country:	Russia
* Date of Award:	06/2014 (month/year)
* Grade obtained / Max. Grade:	4.54/5

(b)

* Academic degree awarded:	
* Title:	
* Institution:	
* Country:	
* Date of Award:	(month/year)
* Grade obtained / Max. Grade:	

(c)

* Academic degree awarded:	
* Title:	
* Institution:	
* Country:	
* Date of Award :	(month/year)
* Grade obtained / Max. Grade:	

(d)

* Academic degree awarded:	
* Title:	
* Institution:	
* Country:	
* Date of Award:	(month/year)
* Grade obtained / Max. Grade:	

4. Employment Experience

Post held and a brief description of the nature of employment. Please include all details which are relevant for your training.

* Do you have any employment experience?
Yes

* If YES, please describe your employment experience:
(Max. 1500 characters)
Engineer
South Ural State University, Chelyabinsk (Russia)
I participate in two scientific research projects connected with Adaptive Vehicle Suspension, Power distribution in all-wheel drive truck transmissions, Trajectory Control for Wheeled Mobile Robots.

5. Language skills

Proof of language proficiency must be provided; please upload a copy of the official documents in section 10.

* Mother tongue: Russian

Other languages:

Language	Listening	Reading	Writing	Speaking
1. English	Fluent	Fluent	Fluent	Fluent
2.				
3.				

6. Publications

Please indicate your most relevant publications, starting with those mostly related to your proposed training.
The references must include: authors, title, publisher, year, city, page number and other relevant bibliographical data.

If you don't have any publication, click on "Save" without writing any information.

(a) (Max. 500 characters)
Alyukov A.S. Simulation of the wheeled mobile robot dynamics in Matlab/Simulink. Materials of the X International scientific and practical conference, "Prospects of world science", Vol. 8, Mathematics. Physics. Modern information technologies. Technical sciences. Construction and architecture. England, Sheffield, 2014.

(b) (Max. 500 characters)
Alyukov A.S. Design of control system for wheeled mobile robot. Materials of the X International scientific and practical conference, Czech Republic, Prague, 2014, P.12-17.

(c) (Max. 500 characters)
Alyukov A.S. On the question of an unsearched algorithm to identify the adaptive model. IX International science and practical conference "Actual scientific problems", Vol. 25, Technical Sciences, Check Republic, Prague, 2013, P. 83-88.

(d) (Max. 500 characters)
Alyukov A.S. The technique of tuning the controller parameters on the transient response of the control object with automatic compensation. IX International science and practical conference "Science in XXI century", Vol. 14, Technology, Bulgaria, Sofia, 2013, P. 65-69.

(e) (Max. 500 characters)
Alyukov A.S. Improving of designs of dynamical stabilized robotic systems on the base of sphere wheel. VII International science and practical conference. Vol. 48, Sofia, 2012. P. 30-33.

7. Proposed Training

Please indicate the main aspects of your proposed training.
The workplan proposed must coherently describe the existing relation between the activities already developed in the home institution and those you intend to develop in the host institution. If your proposed training includes both a teaching and a research component, you must describe both in detail.

* Type of training:
Doctorate

* Duration of the Requested Scholarship: (Number of months)
6

*If you are registered for an official doctoral programme at your home institution, please fill in the information below:
Title of the Doctoral Programme you are enrolled in:
Machines, Drive Systems, Machine Parts
Title of your research project:
Optimal Control for Adaptive Suspension
Field of study of your doctoral programme:
06 - Engineering, technology
06.1 - Mechanical Engineering

* Briefly describe the doctoral programme you are enrolled in at your HEI:
(Max. 1500 characters)
I carry out scientific research in the field of nonlinear control theory. Control theory has a lot of applications in various technical systems, such as, for example, robotics; aerial, terrain and underwater vehicles; technical processes, and others. I work on my PhD in the field of adaptive vehicle suspension control system. It is well known, that suspension of a vehicle has many important functions, namely: to support the vehicle weight, to keep tire contact with the ground, to provide effective isolation of chassis from road excitation, to maintain wheels in appropriate position on the road surface and to guarantee stability of the vehicle. One of the main objectives in the design of suspension is to improve ride comfort. Active suspension system is the effective way to satisfy these functions and to improve suspension performance.

* Describe in detail the work plan you intend to develop at the host HEI:
(Max. 2500 characters)
While in Spain, I plan to do the following:
1. To come to know the scientific works and papers of European scientists working in the field of nonlinear control theory.
2. On the basis of the studies, I am planning to develop some physical and mathematical models of the vehicle suspension.
3. To apply methods and techniques of nonlinear dynamics, developed by scientists who work at Catalonian Polytechnical University to study the dynamical properties of the mathematical models.
4. The dynamical models and designed controllers will be simulated in Matlab/Simulink to illustrate the effectiveness of the proposed methods
5. In collaboration with the European colleagues on the basis of studies and the obtained results to prepare a scientific paper in English to be printed in a European scientific journal.
6. To study Spanish educational system of courses for students who are enrolled in engineering. To be familiar with syllabuses, curriculums, educational training programs and plans, with a list of disciplines which are taught for these students. This knowledge would help us to align the curricula of our University and my host European University for a possible joint teaching of Russian and European students in the future.
The schedule of my work on the project is as follows. During the first month of my Program, I plan to get acquainted with the ongoing research of my European colleagues, to examine their published articles and applied research methods. The next three months I plan to develop mathematical models of the adaptive vehicle suspension, to apply different control methods for mathematical model, to study the stability of the system, to simulate all developed models and controllers. During the fifth month of my staying, I plan to write a research paper together with the European colleagues on the results of our studies. The last month of my staying I plan to edit the article based on the comments of European colleagues, to send the prepared article to an European journal for possible publication. In the same month I plan to draw up a report on the implementation of my project. As familiarity with educational programs and plans, a system of organization of classes, taught courses for students of engineering, I plan to do this kind of my activity throughout all my staying at my host European university

8. Host Universities you apply to

Please prioritise the HEIs you are applying to.

* Field of study of the project you intend to develop at the host Institution:
06 - Engineering, technology
06.9 - Others - Engineering, Technology

* Official Name of your first host Institution priority:
UPC - Polytechnic University of Catalonia
* Country:
Spain
* Official name of the course you intend to attend at the host institution selected as first priority:
Doctorate exchange stay in the Doctorate in Automatic Control, Robotics and Computer Vision
* Is your proposal part of any common project of the two institutions?
No
If YES, please quote the project title:
* Have you established any previous contacts with any academic of the HEI to supervise your work?
Yes
If YES, please quote the name of the academic:
Prof. Jan Rossel, Prof. Raul Suarez

Official Name of your second host Institution priority:
-
Country:

Official name of the course you intend to attend at the host institution selected as second priority:

Is your proposal part of any common project of the two institutions?
If YES, please quote the project title:
Have you established any previous contacts with any academic of the HEI to supervise your work?
If YES, please quote the name of the academic:

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9. Motivation and Added Value
* Please state briefly the main reasons why you intend to undertake post-graduate studies, as well as the added value you perceive to be attached to your training proposal.
(Max. 1000 characters)
Science is what I want to do all my life, and I am sure post-graduate study is a perfect opportunity to improve my scientific and personal skills.
I am well motivated and I have dealt with some similar projects connected with machines and mechanisms. In addition, I would like to draw your attention that I know English in enough extent to complete the project properly. I graduated High Schhol with focus on English, I have studied English at the University, and I have been to the U.S. twice (Work&Travel Exchange Program).
* Why have you chosen this field of study/subject area?
(Max. 1000 characters)
I carry out scientific research in the field of nonlinear control theory. Control theory has a lot of applications in various technical systems, such as, for example, robotics; aerial, terrain and underwater vehicles; technical processes, and others. I work on my PhD in the field of adaptive vehicle suspension control system. It is well known, that suspension of a vehicle has many important functions, namely: to support the vehicle weight, to keep tire contact with the ground, to provide effective isolation of chassis from road excitation, to maintain wheels in appropriate position on the road surface and to guarantee stability of the vehicle. One of the main objectives in the design of suspension is to improve ride comfort. Active suspension system is the effective way to satisfy these functions and to improve suspension performance.
* Please describe briefly the impact of your training proposal on the development of your professional activity.
(Max. 1000 characters)
At the Institute of Industrial and Control Engineering of Catalonian Polytechnical University scientists are actively engaged in the investigation of the nonlinear control theory and its applications in the field of vehicle dynamics. In this field of science some scholars of the Institute, such as a Head of the Division of Robotics, namely Dr. Raúl Suárez, and Doctors Basañez, L, Nuño, E, and others carry out their scientific research. These scientists have made significant contributions to Robotics. In my Project I want to develop mathematical model of the adaptive vehicle suspension and apply methods of nonlinear control theory which are used by the European scientists to design a control system. Ability to conduct research with these scientists will undoubtedly allow me to fulfill my scientific project at a high level.
* Please explain briefly how you think your training proposal might contribute to the development of institutional links between the home and host institutions.
(Max. 1000 characters)
I am ready to share all my knowledge with my European colleagues. In particular, I am good at computer modelling. I am familiar with Matlab/Simulink environment. During my staying in the Germany, I plan to make a presentation to describe my work and my skills for the scientists of my host University.
After coming back in Russia, I plan to share with Russian scientists and students all my experience gained as a result of the Project. I am going to hold a meeting with scientists of the South Ural State University. In addition, I plan to develop a teaching course in English named "Vehicle Control Systems" for students whose specialty is "Automobiles". My scientific and educational contacts with my host European university will be supported after my coming back in Russia.

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10. Document Upload
Applicants must send (upload) the following documents:
(DOC or PDF, with a maximum of 2 MB each)
Due to limitations in the webserver that hosts this website, the uploaded documents must have a maximum size of 2 MB.
  ✔ *** ID card or Passport:**
     ID.pdf (896.553 bytes)
   * Educational Record (transcript of records) / Degree Certificates:
✔ In the case of having achieved more than one academic degree, the uploaded file must contain the scan of all documents.
     History.pdf (2.752.221 bytes)
  ✔ *** Invitation letter**
     InvitationLetter.pdf (200.811 bytes)
   * Language Certificates:
✔ If the host institution you're applying to demands specific language skills (eg. Dutch or English), the upload of the correspondent language certificate is mandatory.
     Language.pdf (2.054.883 bytes)
   * CV (Curriculm Vitae):
✔
     CV.pdf (118.224 bytes)
  ✖ **Proof of economical and/or social disadvantage situation (optional)**
   Other documents (recommendation letters ...):

     Other.pdf (1.618.118 bytes)

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