

Date **2008 11 06**

Valid until: **2009 11 06**

CONTACT DETAILS

Research organisation / Enterprise	Research organisation (High Education)
Organisation Name	Technical University of Cluj-Napoca
Department	The Industrial Robots Simulation And Testing Center-CESTER Department of Mechanics and Computer Programming
Address City Country	Constantin Daicoviciu 15 Cluj-Napoca Romania
www address	www.utcluj.ro , www.cester.utcluj.ro

Researcher / Contact person	Professor Dr. Ing.
Name / Surname	Doina Liana PISLA
Gender	<input type="checkbox"/> M <input checked="" type="checkbox"/> F
Telephone Fax	0040-264-401684 0040-264-401765
E-mail	Doina.Pisla@mep.utcluj.ro doinapisla@yahoo.com

ORGANISATION TYPE

Research organisation type	<input checked="" type="checkbox"/> Research Organisation <input type="checkbox"/> Company <input type="checkbox"/> Other	Is your company a Small and Medium Sized Enterprise (SME*)? Number of employees:	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO
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Description of research activity:

CESTER is the internationally recognized research centre through the German-Romanian project, financed by the DAAD and the Institute of Machine Tools and Production Engineering, IWF, Technical University Braunschweig, Germany. Through their facilities, the CESTER laboratories are unique on the national level and allow the continuous development of the parallel robots field for many applications.

We coordinate many national and international projects in the next fields:

- Surgery robots (kinematics, dynamics, control, workspace, design, control);
- E-learning platforms for laparoscopic surgery;
- Parallel robots (kinematics, dynamics, control, workspace, design, control);
- Modeling and Simulation of robotic systems;
- Microrobots (kinematics, dynamics, control, workspace, design, control);

We have collaboration for a long time within national research projects with Surgery Clinic III, University of Medicine of Pharmacy Cluj-Napoca.

We are involved in the realization of the project PARMIS (www.parmis.utcluj.ro). Project main target consists in joining competences coming from multiple domains, in order to develop innovative solutions with high performances, and advanced control systems based on the concept and the features of parallel robots, that will offer efficient solutions for applications in the field of minimum invasive surgery.

**Former participation in
an FP European
project?**

☐ YES ☒ NO

Project title / Acronym:

Activities performed:

* Your enterprise is an SME if:

- it is engaged in **economic activity**
- it has **less than 250 employees**
- it has either an **annual turnover not exceeding €50M**, or an **balance sheet total not exceeding €43M**
- it is **autonomous**

For the definition of SMEs, look at:

http://ec.europa.eu/enterprise/enterprise_policy/sme_definition/index_en.htm

EXPERTISE/COMMITMENT OFFERED

Keywords specifying the expertise:

Robotic surgery, CAD systems, parallel robots, modelling, virtual medicine, e-learning platforms, simulation

Description of the expertise:

We offer our experience in the next fields:

- Surgery robots (kinematics, dynamics, control, workspace, design, control);
- Parallel robots (kinematics, dynamics, control, workspace, design, control);
- Modeling and Simulation of robotic systems;
- E-learning platforms for laparoscopic surgery;
- Software for virtual medicine;
- Microrobots (kinematics, dynamics, control, workspace, design, control);

Commitment offered

☒ Research
 ☐ Demonstration
 ☒ Training
☒ Technology
 ☒ Dissemination
 ☐ Other:

Interested in participation in Project types

<input type="checkbox"/> Large-scale integrating collaborative project	<input type="checkbox"/> Small or medium-scale focused research collaborative project	<input type="checkbox"/> Targeted to SMEs	<input type="checkbox"/> Other (Marie Curie Actions, ERA-NET...):
<input checked="" type="checkbox"/> Coordination and Support Action	<input type="checkbox"/> Network of Excellence	<input type="checkbox"/> Research for the benefit of SMEs	

Call references

Call Health 2009-1.3-1. New initiatives towards the implementation of the replace, Reduce and Refine strategy
Coordination and support actions (Coordinating)

Main Research Topics : Development of an advanced virtual model used for surgical robots testing and calibration – SURGMOD

Duration of the project: 2 years

Robotic surgery is an interdisciplinary domain by excellence and has no chance to evolve without collaboration between experts in surgery, anatomy and, last but not least, the developers of new surgical devices (mechanics, robotics and informatics) because the new devices are almost in equal position with the surgeon for the intervention to succeed. Another important domain to facilitate the robotic intervention is the quality of the information from imagistic investigation, computed of graphical stations with 3D reconstruction which offer more data regarding the topography, structure and the relations between lesions and internal structures. The main information source is the computer tomography with contrast injection, and for complementary feed-back, the grey-scale and Doppler ultrasound. SURGMOD represents an opportunity for development of informatics instruments for testing the new surgical robots, for learning the manipulation of a surgical robot, but also for virtual experimentation of some operative procedures before the real intervention.

In this project we are proposing the initiation of specific strategies in order to develop an advanced virtual model for testing and calibration surgical robots. This virtual model avoids laboratory animal experimentation and also is very useful for learning the surgical robot manipulation, also avoiding the use of animal models.

The medical domains where SURGMOD will be used for are dedicated robots for neurosurgery, orthopedic surgery, laparoscopic surgery, cardiovascular and thoracic surgery, etc. This platform allow testing of different devices used for different medical specialties on the same virtual model. Moreover the background of designing of this virtual model will allow three-dimensional reconstruction of different anatomical structures from different real models (animal or human) without damaging it. For surgical robots with haptic enhancements the tactile sensing will be facilitated, creating a more realistic environment.

We are looking forward for partners who have interest in this domain.

EXPECTATIONS

Term commitment

☒ Short (< 1 year) ☒ Medium (1 to 3 years) ☐ Long (more than 3 years)

Expected results for your organisation:

We intend to make the proposal SURGMOD until deadline 3.12.2008.
We are looking for partners with the expertise in one of these domains:
Surgery
Robots for surgery applications
Software for surgery
Modeling and Simulation of robotic systems for medical applications
Virtual surgery
Haptic devices for medical applications

I agree with the publication of my contact data: ☒ YES ☐ NO