

Host organization: Institute of Robotics-Bulgarian Academy of Sciences (IR-BAS)

Country: Bulgaria

Organization role: Beneficiary/ WP leader/ Task leader

Project Acronym: CybSPEED

Project start and end date: 1.12.2017-30.11.2021

Type of MSC action, H2020: RISE





Your story:

The idea for submitting a collaborative project as CybSPEED on a topic related to using the multi-level pedagogical potential of robotic technology, including understanding social mechanisms by artificial agents/robots, was born within the "3rd European Network for the Advancement of Artificial Cognitive Systems, Interaction and Robotics, Project no.: 269981, Coordination Action, European Commission, 7th Research Framework Programme, Information and Communication Technologies" where many of the key researchers in CybSPEED participated - from UPV/EHU (Spain), IR-BAS (Bulgaria), EMaTTech (Greece) and CVC/UAB (Spain). The core partners invited PRAXIS Ltd. (Greece) and Theater Tsvete (Bulgaria) to provide practical knowledge on work with children and adolescents possibly vulnerable due to preexisting conditions, UGA (France) and CHU (France) to provide expertise in virtual reality implemented for sensation resoring, as well as the international partners Kyutech (Japan), CEINE (Chile) and UH2C (Morocco) with whom there were previous research links in computational modeling, neurocomputation and robotics. In particular, it is worth emphasising that for a number of years IR-BAS maintained strong collaboration links with the research laboratory of Associate Professor Hiroaki Wagatsuma at the Graduate School of Life Sciences and Systems Engineering of Kyushu Institute of Technology, Japan, resulting in common studies, publications and project plans. The main focus was on designing novel, smart, interactive software agents or robotic devices based on knowledge derived from most recent neurocomputational studies.

The configuration of organisations was most appropriate for a Marie Skłodowska Curie Action RISE - Research and Innovation Staff Exchange – consisting of 5 academic and 3 practical-field beneficiaries as well as 3 international academic partners. Professor Manuel Grana from UPV/EHU was elected unanimously the Coordinator of the project by the project team.

Project objectives and research field:

The objective of the CybSPEED project is analysis, synthesis, modeling, evaluation and implementation of cyber-physical systems for pedagogical rehabilitation in special education. The research field is highly multidisciplinary and involves specialists from pedagogical sciences, special education, psychology, neuropsychology, medicine, computational modeling and simulation, neurocomputation, mechatronics and robotics.

Tell us why the topic is important and/ or how it brings to advancement in your research field:

The topic is extremely important, in our view, because it deals with the school of the future. By bringing the most recent technological and computational advances into schools in an integrative manner, the aim of education will become more achievable - to provide individualised style of education to every student according to their learning and developmental needs.

A number of studies within CybSPEED are underway, including EEG and eye-tracking recording applied to investigating how people perceive lessons provided with the help of robots and how robots help attract and maintain the attention focus during the lesson. A group of studies will bring robotic and other interactive technology (e.g. Kinect, EmoSan) to the field - the day centers - where observations by specialists will help understand the pros and cons of technology brought to education. A number of simulations of the learning process based on high-level abstract computational models, guided by EMaTTech and UPV/EHU, are also foreseen. The final result is expected to be a novel framework for design of cyber-physical systems for pedagogical rehabilitation in special education.

What are the benefits of participating in a MSC action?

Benefits of participating in a MSC action, among others, are: Transfer of knowledge and research ideas among different continents and thus making the most for each individual researcher career; Getting to know each other more closely and learning to work in diverse teams; Bringing ideas from practice into academia and vice versa; Collaborating in a democratic research community where hierarchies among people are brought to a minimum.

Successes under the project are the two trainings that took place in Sofia in March and in Kavala in September 2018, integrating approaches of "hard" and soft training to bring together the participants in an informal, team building manner. The Sofia training was organised with the active involvement of Associate Professor Maya Dimitrova and Associate Professor Snezhana Kostova. Success is also the conference that took place in August in Varna on "Robotics & Mechatronics and Social Implementation", organised with the active involvement of Professor Roman Zahariev

and Associate Professor Nina Valchkova, presenting the first obtained results from the implementation of the CybSPEED project.

Papers were accepted at two IEEE conferences with the valuable contribution of Professor Anna Lekova, Professor Tanio Tanev and ESR Eng. Pancho Dachkinov, with the collaboration of Professor Omar Bouattane (Morocco) and Associate Professor Hiroaki Wagatsuma (Japan).

Did you encounter any challenges during application/ implementation and did you get any help?

IR-BAS is participating in an MSCA of Horizon 2020 for the first time and met many challenges along the way. In this process a lot of efficient and timely help was received from the NCPs in our country. The NCPs at BAS helped understand many of the organisational issues of a RISE project, such as - managing the provided financing, documentation on audits and reporting, ways of communicating with the administration of the institute, with the other beneficiaries, etc.

Would you recommend others to apply? What useful advice/ tips can you give them?

We definitely recommend others to apply since a MSCA is a valuable tool for research communication and collaboration without frontiers. The advice we can provide is to establish a working collaboration among the participating organisations well before the submission of the proposal.

What strategies did your organization use to attract the fellow/s? Are they in line with national strategies supporting the widening EC policy?

The benefits of participating in a MSCA-RISE were explained to each individual fellow both in terms of the rules for funding distribution among them and the potential for their career advancement by participating in CybSPEED. A team of three persons was appointed to coordinate the individual requests of the fellows for funding in relation to their secondments as well as to other research expenses like purchasing equipment, participation in conferences, etc.

The motivation for aiming at best performance, to collaborate with other institutions, to build sustainable partnerships inside EU and with the best partners from outside EU is in line with the national strategies supporting the widening EC policy.