

Results concerning the University: Industry Partnership for a Research Project Implementation (MUROS) in the Romanian Program Star

Authors : Loretta Ichim, Dan Popescu, Grigore Stamatescu

Abstract : The paper reports the collaboration between a top university from Romania and three companies for the implementation of a research project in a multidisciplinary domain, focusing on the impact and benefits both for the education and industry. The joint activities were developed under the Space Technology and Advanced Research Program (STAR), funded by the Romanian Space Agency (ROSA) for a university-industry partnership. The context was defined by linking the European Space Agency optional programs, with the development and promotion national research, with the educational and industrial capabilities in the aeronautics, security and related areas by increasing the collaboration between academic and industrial entities as well as by realizing high-level scientific production. The project name is Multisensory Robotic System for Aerial Monitoring of Critical Infrastructure Systems (MUROS), which was carried 2013-2016. The project included the University POLITEHNICA of Bucharest (coordinator) and three companies, which manufacture and market unmanned aerial systems. The project had as main objective the development of an integrated system for combined ground wireless sensor networks and UAV monitoring in various application scenarios for critical infrastructure surveillance. This included specific activities related to fundamental and applied research, technology transfer, prototype implementation and result dissemination. The core area of the contributions laid in distributed data processing and communication mechanisms, advanced image processing and embedded system development. Special focus is given by the paper to analyzing the impact the project implementation in the educational process, directly or indirectly, through the faculty members (professors and students) involved in the research team. Three main directions are discussed: a) enabling students to carry out internships at the partner companies, b) handling advanced topics and industry requirements at the master's level, c) experiments and concept validation for doctoral thesis. The impact of the research work (as the educational component) developed by the faculty members on the increasing performances of the companies' products is highlighted. The collaboration between university and companies was well balanced both for contributions and results. The paper also presents the outcomes of the project which reveals the efficient collaboration between high education and industry: master thesis, doctoral thesis, conference papers, journal papers, technical documentation for technology transfer, prototype, and patent. The experience can provide useful practices of blending research and education within an academia-industry cooperation framework while the lessons learned represent a starting point in debating the new role of advanced research and development performing companies in association with higher education. This partnership, promoted at UE level, has a broad impact beyond the constrained scope of a single project and can develop into long-lasting collaboration while benefiting all stakeholders: students, universities and the surrounding knowledge-based economic and industrial ecosystem. Due to the exchange of experiences between the university (UPB) and the manufacturing company (AFT Design), a new project, SIMUL, under the Bridge Grant Program (Romanian executive agency UEFISCDI) was started (2016 - 2017). This project will continue the educational research for innovation on master and doctoral studies in MUROS thematic (collaborative multi-UAV application for flood detection).

Keywords : education process, multisensory robotic system, research and innovation project, technology transfer, university-industry partnership

Conference Title : ICERI 2017 : International Conference on Education, Research and Innovation

Conference Location : Prague, Czechia

Conference Dates : March 23-24, 2017