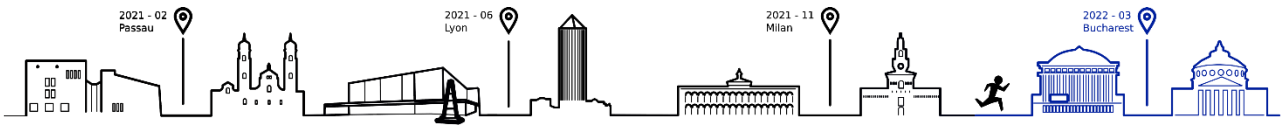


FIT Europe 4th seminar

« Integrating Assistive Robots in a Multicultural and Multigenerational Society »

University Politehnica of Bucharest, March 21st to 25th 2022

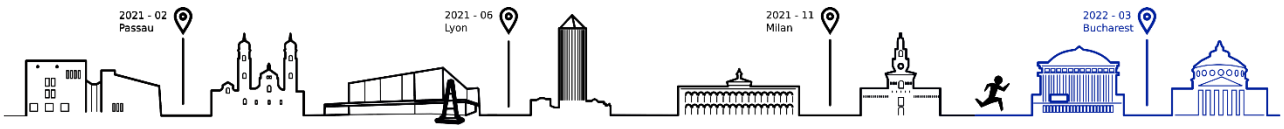
At the end of March 2021, master students from Bucharest (Romania), Lyon (France), Milan (Italy) and Passau (Germany) have experienced a week discussing the theme of assistive robotics and intelligent robots in general. Besides the interesting discussions and presentations that took place during the seminar, FIT Europe participants met the Pepper, Nao and Baxter robots, tasted some delicious Romanian traditional foods, discovered the old Bucharest city center and walked along the "Dâmbovița" river.

Beginning March 21th, students from INSA Lyon (France), University Politehnica of Bucharest (Romania), University of Milan (Italy) and University of Passau (Germany) were immersed for a week in the field of assistive robotics through the fourth seminar of the "**Future IT Leader for a Multicultural Digital Europe – FIT Europe"** project. This project, co-funded by the Erasmus+ Programme, is intended to provide IT students with high level European training on emerging technologies (such as Big Data, Internet of Things, Blockchain and Assistive Robotics) along with its related socioeconomic implications (such as innovation, multiculturalism, ethics or privacy). The four academic institutions (INSA Lyon, Politehnica Bucharest, Università degli Studi di Milano, Universität Passau) and their corporate partners (La French Tech One, IT Center for Science and Technology CITST, Engineering SPA, ATOS) have gathered forces to improve the skills of master students as leaders in the IT field.

During the Bucharest seminar, the 28 participating students addressed the topic of "Integration of Assistive Robots, in a Multicultural and Multigenerational Society". Students, researchers and industrial experts discussed about the challenges faced by the integration of robots in a human environment (navigation, interaction, person/object recognition and detections, integration), the different perspective on what the role of robots should be, how robots should behave, the different levels of acceptance towards robots and the different levels of understanding of how a robot works. In addition, discussions took place about what it can be expected from a robot, about the security, privacy and ethical issues, intelligent automation as well as about recycling and recovering of materials used in robotics and electronics in general. An examination of the role of assistive robots in a society where generations and cultures meet and mix has occurred.

All the students were physically present in the UPB campus during the seminar. The participation of the researchers and industrial experts was hybrid: some of them were physically present in the UPB campus, some of them participated digitally. The researchers and industrial experts from France, Germany, Italy and Romania conducted high-level presentations that enriched the knowledge of the participating students in the field of assistive robotics. In addition, the students enriched their skills by participating to the development of a navigation module for a custom ant robot, built by a researcher at UPB and by visiting the AIMAS laboratory at UPB where thy meet Pepper, Nao and Baxter robots and took a close look on the projects in which the laboratory is implicated.

FIT Europe is meant to facilitate interactions and collaboration between international students from different universities. At the beginning of the seminar, several controversial topics were proposed as challenges for the students. Students organized themselves in 5 teams and each team picked a controversial topic that worked on during the seminar. In the last day of the seminar, each team presented its work and conclusions. This



opportunity allowed the students to work in international teams, to develop intercultural skills, and to develop their own points of view regarding current controversial subjects. The selected topics were:

- Are robots better fit for the future than humans? *(Orange Team)*
- Can one be a fan of a robot football team? *(Purple Team)*
- Can we let robots autonomously make important decisions, which concern humans? *(Blue Team)*
- Reasoning about ethical issues in designing assisted living robots. *(Red Team)*
- Robotic Revolution. *(Green Team)*

During the seminar, students from each team worked on the controversial topic that they selected and on the last day, each team presented their project to the FIT Europe participants.

Schedule

On the first day of the seminar, participants gathered in the charming CAMPUS building where the seminar took place. The building is one of the newest buildings in the UPB campus and the most suitable for our seminar. At the beginning of the day, Prof. Adina Magda Florea, Vice Rector of UPB and Prof. Emil Slusanschi, the Director of the Computer Science and Engineering Department, welcomed the participants and illustrated the importance of the FIT Europe project and the topic covered by the seminar. After the welcoming address, participants attended 3 interactive sessions about “Dealing with Unknown Environments for Autonomous Robots”, “The Quest for Safety in the context of Swarms of mobile Robots” and “Improving human-robot interaction with AI”.

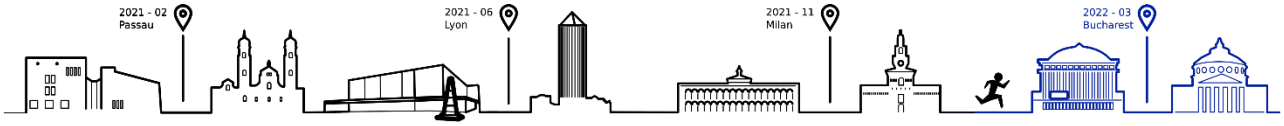
On the second day, the participants attended 4 sessions about “Privacy by design in embedded systems”, “Security, Privacy and Ethical issues for next-gen Automotive”, “Social Robotics: Challenges and Applications” and “Intelligent Automation at Estee Lauder Companies”. The second day ended with a dinner in the old center of Bucharest, that was composed of various delicious Romanian traditional dishes. The dinner was followed by a short discovery walk in the area and along the “Dâmbovița” river.

On the third day, the participants attended 3 sessions about “Elderly Assistance and Monitoring Using a Robotic Platform”, “Assessing risks in a data science project” and “Towards a Society of (Augmented) Humans, (Intelligent) Avatars and Digital twins, and Robots”. At the end of the third day, the participants attended the first hands-on session: “Robot Autonomy and the Unknown Environment, first part”.

On the fourth day, the participants attended 3 sessions about: “Critical raw materials, conflict minerals and shortfall of elements used in electronic and electrical devices”, “From service to assistive robotics with EARL-based system engineering” and “Smart Health Records: How can we do better?”. At the end of the fourth day, the participants attended the second hands-on session: “Robot Autonomy and the Unknown Environment, second part”.

On the fifth and last day of the seminar, the participants attended 1 session about: “Ethical implications of AI use and user-centered design”. After the presentation, the students presented the controversial topic they worked on in their teams during this FIT Europe seminar. Since FIT Europe is meant also to facilitate interactions between students, researchers and industrial experts, after the presentations researchers and industrial experts provided feedback around the work of each team and discussed openly about the controversial topics that were presented. The fifth day ended by a closing ceremony in which the winning teams were announced. The work of the five teams was high-level quality and exceeded the expectation of the jury. However, two teams (*red* and *purple*) showed a deeper address and better structure of their topics, and as such they were chosen as the best teams in this FIT Europe Seminar.

Co-funded by the Erasmus+ Programme of the European Union



The UPB team would like to thank their industrial and academic partners along with every person who got involvement in organizing this seminar. In addition, UPB would like to acknowledge the European Commission for co-funding the project. Finally, UPB would like to thank deeply the students for their work and implication during the seminar.

Student feedback

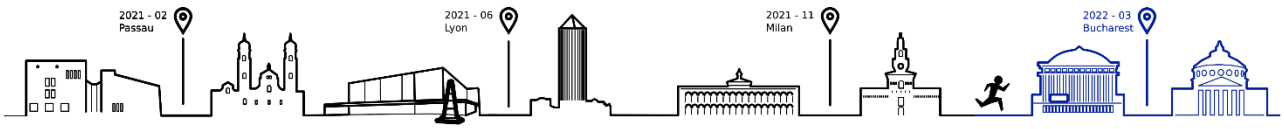
A survey was conducted among students to gather feedback on the fourth FIT Europe seminar. 50% of the participants answered the 17-questions survey. The results of the survey are very encouraging. 75% of the respondents considered the organization of the seminar, as well as the venue of the seminar, were *great* or *excellent*. Most students considered the schedule was fairly loaded and fairly difficult, but understood that this was in fact necessary in order to exploit at the maximum the timeframe of the seminar. The great majority of the students considered that they learned *quite a few (*or even *a lot of) things* in the technical field (75% of respondents), *a lot* in the ethical / societal field (60%, and an additional 15% learned *quite a few things*), and *quite a few things* in the business field (35%). 66% of respondents thought the quality of the sessions was *very good* or *excellent*. Our goals regarding intercultural interaction were also achieved in a great measure: 50% of students stated that they spent time, during the seminar, mostly or entirely with students from other universities.

Further information:

The European (France, Germany, Italy and Romania) task force of the FIT Europe project comprises four leading Universities, four corporate partners, with the support of local authorities, and it aims at gathering companies' needs and priorities, and developing and implementing relevant evolutionary process of 4 seminars, far beyond a classical student's exchange framework or a new ICT module. For each seminar, we focus on an emerging technology that is disrupting the current technological paradigm (such as AI, Internet of Things, Blockchain, Assistive Robotics, Artificial Intelligence) along with its related socioeconomic implications (such as Innovation, Entrepreneurship, Multiculturalism, Globalization, Ethics, Privacy). Target groups in the committed institutions are young, local and international IT master students and teacher-researchers whose expertise could be sharpen through workshops and seminars between the academia and the industry in shared curricula. The industry will also profit from this trialogue.

An open resource library, a white paper and multiplier events in the four European countries will ensure an appropriate dissemination in order to increase awareness among diverse stakeholders.

FIT EUROPE aims to create a platform which enables the industrial and academic participants to develop methods and practices, analyze social and/or economic impacts of emerging technologies and to produce new knowledge on how IT can contribute to boundary-breaking innovations that will enable ambitious development and growth in intelligent socio-technical futures, all of which combines to realize the goal of educating 'Future IT leaders for a Multicultural, Digital Europe'.



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