



ERCIM "ALAIN BENSOUSSAN"
FELLOWSHIP PROGRAMME



Scientific Report

First name / Family name	Anna Mavroudi
Nationality	Greek
Name of the <i>Host Organisation</i>	Norwegian University of Science and Technology
First Name / family name of the <i>Scientific Coordinator</i>	John Krogstie
Period of the fellowship	01/10/2015 to 31/09/2016

I – SCIENTIFIC ACTIVITY DURING YOUR FELLOWSHIP

During the fellowship I focused on the topic of Adaptive Learning Analytics (ALA) which fall within the area of Technology-Enhanced Learning (TEL). The research plan that corresponded to the scientific activity contained four parts. The first part involved a systematic literature review on the topic in order to identify research gaps and, also base our research design on solid ground. The second part involved the design of a use case on the topic that took place in the context of a programming course at the hosting department. The third phase involved the actual enactment of the ALA intervention along with participating students. And the fourth phase involves refinements and follow-up projects. The main points of each phase can be summarised as follows:

- point 1a. Selection of a specific methodology for conducting a systematic literature review which was comprised mainly by four sub-phases (search strategy, inclusion/exclusion criteria, quality assessment criteria, review)
- point 1b. Create a definition and a reference framework for ALA
- point 2a. Design the ALA intervention (instructional design for TEL, design of the ALA environment, research design)
- point 2b. Author and submit a proposal that included a detailed description of the research design and the research instruments to the NSD - Norwegian Centre

for Research Data, a body working under the auspices of the Ministry of Education and Research which is responsible for validating and approving empirical research with respect to data gathering, data analysis, and issues of methodology focusing on privacy and research ethics; the proposal was approved without any suggestions for refinements

- 3a. The tutor of the programming course and the ERCIM researcher informed the students and the teaching assistants about the ALA intervention (aims and objectives, procedures, requirements).

- 3b. A group of participating students were monitored by the adaptable learning analytics plugins; at the end of the intervention, these students were interviewed.

- 4a. All the data were gathered and are analysed.

- 4b. Follow-up projects are discussed.

II – PUBLICATION(S) DURING YOUR FELLOWSHIP

Journal paper accepted in the “Interactive Learning Environments” journal: Mavroudi A., Giannakos M., Krogstie J. (2016). Supporting adaptive learning pathways through the use of learning analytics: Developments, Challenges and Future Opportunities

Accepted papers in conferences with a blind-review process

1. Hadzilacos Th, Mavroudi A., Georgiou K., Otero N., Mueller W. (2016). On the creation of sustainable design patterns of ICT integration in the classroom. In Proceedings of the 10th Mediterranean Conference on Information Systems (MCIS2016), September 4-6, Paphos, Cyprus (accepted)
2. Mavroudi A., Hadzilacos Th., Angeli Ch. (2016). An Adaptive E-learning Strategy to Overcome the Inherent Difficulties of the Learning Content. In Proceedings of the 11th European Conference on Technology Enhanced Learning (EC-TEL), September 13-16, Lyon, France (accepted).
3. Mavroudi A., Giannakos M., Krogstie J. (2016). Combining adaptive learning with learning analytics: precedents and directions. In Proceedings of the 11th European Conference on Technology Enhanced Learning (EC-TEL), September 13-16, Lyon, France (accepted).
4. Trøttestad H., Mavroudi A., Giannakos M., Krogstie J. (2016). Adaptable learning and learning analytics: a case study in a programming course. In Proceedings of the 11th European Conference on Technology Enhanced Learning (EC-TEL), September 13-16, Lyon, France (accepted).
5. Mavroudi A., Giannakos M., Krogstie J. (2016). Insights on the interplay between adaptive learning and learning analytics. In Proceedings of the 16th IEEE International Conference on Advanced Learning Technologies - ICALT2016, July 25-28, Austin, Texas, USA (accepted).
6. Mavroudi A., Miltiadous M., Libbrecht P., Muller W., Hadzilacos Th., Otero N., Barth K., Georgiou K. (2016). Let me do it: towards the implementation of

sustainable instructional patterns. In Proceedings of the 16th IEEE International Conference on Advanced Learning Technologies - ICALT2016, July 25-28, Austin, Texas, USA (accepted).

7. Mavroudi A., Tzagari D. (2016). Language Assessment Literacy Enhancement: any room for Technology-Enhanced Language Learning? In Proceedings of the 16th IEEE International Conference on Advanced Learning Technologies - ICALT2016, July 25-28, Austin, Texas, USA (accepted).

Paper in preparation: Mavroudi A., Giannakos M., Trættemberg H., Krogstie J. (2016). The case of adaptive learning analytics in the context of a programming course.

III – ATTENDED SEMINARS, WORKSHOPS, CONFERENCES

I attended the 1st International Workshop on the Leadership of Women in Computing Science (Special theme: Mentorship Framework) in the context of the 22nd ICE/IEEE International Technology Management Conference (June 13-14, 2016, Trondheim, Norway) and presented a position paper. I was member of the program committee of this workshop. The workshop covered mentor and mentees issues for women in academia (Postdoc, PhD, MSc, BSc) and in industry. Also, I attended the 16th IEEE International Conference on Advanced Learning Technologies - ICALT2016 (July 25-28, 2016, Austin, Texas, USA) and presented two poster papers and one full paper. In addition, I attended an information meeting for researchers and staff at the Faculty of Information Technology, Mathematics and Electrical Engineering (IME) titled “RESEARCH FUNDED BY THE EU: HORIZON 2020” aiming to present the funding schemes and opportunities of the Horizon2020 programme to all the interested employees of the faculty. Finally, I participated in the seminar titled “How to develop a project – Horizon 2020”¹ (08th December 2015, Sør-Trøndelag University College, Trondheim). During the fellowship, I attended the 10th Mediterranean Conference on Information Systems which was held in Cyprus on 4-6 September 2016. I presented a short paper and co-chaired the e-learning track² of the conference. Finally, I will attend the 11th European Conference on Technology Enhanced Learning (EC-TEL 2016), since two short papers and a poster paper were accepted in that particular conference.

IV – RESEARCH EXCHANGE PROGRAMME (REP)

The hosting organisation of the REP was KU Leuven in Belgium between the 14th and the 22th of March 2016. The local scientific contact was Prof. Jan Elen. The schedule reflected my diverse research interests on TEL and involved a series of meetings with researchers of a) the Centre for Instructional Psychology and Technology³, b) the Human-Interaction research group from the Department of Computer Science and c) the Interactive Technologies (ITEC)

¹ The seminar program is available here: <http://goo.gl/e8TSFd>

² The description of the e-learning track http://www.mcis2016.eu/files/E_Learning.pdf

³ <http://ppw.kuleuven.be/home/english/research/etrg/CIPT>

research group⁴. In addition, as part of the REP, I undertook the following: a) a presentation of the ERCIM research plan to a group of ITEC researchers which also included preliminary results of the systematic literature review on ALA, b) a guest lecture on adaptive and personalised learning to the students of the course titled “Topics in Educational Technology (<https://goo.gl/HgZt3q>) and c) attended a lesson in the course “Designing learning environments” (<https://goo.gl/1zRWxr>) which is held in English. A follow-up visit from Dr. Katie Goeman took place at the Computer Science and Information department. She is assistant professor in the Faculty of Economics and Business (FEB) of KULeuven and senior researcher at the Centre for Instructional Psychology and Technology.

⁴ <https://www.kuleuven.be/samenwerking/iminds/itec/projects/technology-enhanced-learning>