

ESR 12

Name: Vasiliki Nikolakopoulou

Credentials: Mathematician,
MSc in Design of Interactive and Industrial Products and Systems

Start day: 01/02/2016

End day: 31/8/2017

Involved in WP: WP1, WP4, WP5, WP6, WP7

Hosting Institution: Cyprus University of Technology, Digital Heritage Research Lab



Research Training Activity in ITN-DCH

A. Summary of the Career Development Plan:

As a Mathematician, with further specification in Informatics and Education, and having a professional background as an e-course developer for the University of Athens' e-Learning Platform, my research is now mainly focused on the creative reuse of digital CH artefacts taking into account the respective semantic signatures. In conjunction with exploration of innovative methodologies for harvesting multimedia 3D/4D data sets, my case studies have been concentrated on their experimental implementation and evaluation in educational environments. During the first months of the fellowship, a literature review was conducted on the state of the art metadata schemas and standards as well as lessons learnt from their implementation in digital libraries, archives, museums, repositories and relevant cloud and social media services. Practical experience and additional knowledge, has been, and continues to be, added through secondments, hands on training activities on the field, attendance and organization of scientific conferences, workshops and dissemination and outreach activities.

The focus of the research is on:

- Study and analysis of massive and complex amounts of multimedia 3D/4D data
- Study and analysis of data storage and archiving in multimedia digital libraries
- Development of Innovative methodologies for harvesting of massive and complex multimedia data sets in digital libraries taking into account object's semantic signatures
- Development of Innovative methodologies for reuse of such complex structures from digital libraries.

Following the tasks and methodologies presented below:

- Review and evaluation of current methodologies in cooperation with Europeana
 - Case study on educational environments
- Development and experimental implementation of their results
- Evaluation of implementation results

B. Core Research Training Activity

Core Research Training is being carried through theoretical and practical, hands on experience in related academic and industrial sectors. The theoretical study and approach: from metadata and semantics to holistic development of heritage building modelling systems, has already resulted to a book chapter on Springer, as well as seven conference papers relevant to e-documentation of Monuments and Education, a poster presentation, numerous research reports and contributions to project's Deliverables.

Practical experience has also been gained through Case Studies in the field together with, and numerous Heritage tours by, professionals from all the related disciplines in the project and other related activities. To name a few:

1. The Case of Saint Neophytos Monument: a field research with the NTUA partner, architects, and priests. Apart from the on-site training on data acquisition, the case study has also resulted in a research paper with multi-disciplinary contributions.
2. Secondment at 7Reasons: an intense training on data processing and 3D modelling techniques through various software. This training was invaluable in order for me to determine my position in such a multidisciplinary project pipeline, to acknowledge my expert and non-expert users' concerns and to prioritize user requirements.
3. Attending Courses at CUT and giving supporting lectures for the Courses "*Digital Cultural Heritage*" and "*Computer Graphics*".
4. Organizing Dissemination & Outreach activities for the Project: Booth, Interactive installations, Leaflet and Poster Design, Interactive Workshop activities for parents and children at Researchers' Night and Mediterranean Science Festival.

C. Secondments:

- 7REASONS

D. Dissemination & Outreach:

As part of the ITN-DCH training, ESR12 will participate in a number of outreach activities, to offer training and research results back to a public forum.

Event Name	Participation Description	Dates
CASA'16, Geneva, Switzerland	ITN-DCH Meeting, Networking	23/5 – 25/5/2016
SEAHA, Oxford, England	Active Participation, Poster, Networking	20/06 - 21/06/2016
CGI'16, Heraklion, Crete, Greece	Summer School, Attendance, Poster, Networking	27/6-1/7
EU Researchers' Night, Nicosia, Cyprus	Active Participation, Organization, Dissemination & Outreach	29/09/2016
EuroMed2016 International Conference, Nicosia, Cyprus	Organization Committee, Active Participation, Networking	31/10 - 05/11/2016
Europeana Space 3 rd International Conference, Berlin, Germany	Attendance, Active Participation, Networking	21/11 - 22/11/2016
Mediterranean Science Festival, Limassol, Cyprus	Active Participation, Workshop, Dissemination & Outreach	29/04/2017

Also, papers at conference proceedings, and book chapter as part of Research Outcomes.

Name	Publication	Authors
Towards Monuments' Holistic Digital Documentation: The Saint Neophytos Enkleistriotis Case Study	Progress in Cultural Heritage: Documentation, Preservation, and Protection. 6th International Conference, EuroMed 2016, Nicosia, Cyprus, October 31 - November 5, 2016, Proceedings, Part I. pp. 442–473. Springer International Publishing, 2016	Marinos Ioannides et al.
Educational creative use and reuse of digital cultural heritage data for Cypriot UNESCO monuments	Progress in Cultural Heritage: Documentation, Preservation, and Protection. 6th International Conference, EuroMed 2016, Nicosia, Cyprus, October 31 - November 5, 2016, Proceedings, Part I. pp. 891–901. Springer International Publishing, 2016	Marinos Ioannides et al.
Parian Marble: A Virtual Multimodal Museum Project	Digital Heritage. Progress in Cultural Heritage: Documentation, Preservation, and Protection. 6th International Conference, EuroMed 2016, Nicosia, Cyprus, October 31 - November 5, 2016, Proceedings, Part II. pp. 256–264. Springer International Publishing, 2016	Marinos Ioannides et al.
Immersive Digital Heritage Experience with the Use of Interactive Technology	Progress in Cultural Heritage: Documentation, Preservation, and Protection. 6th International Conference, EuroMed 2016, Nicosia, Cyprus, October 31 - November 5, 2016, Proceedings, Part II. pp. 265–271. Springer International Publishing, 2016	Marinos Ioannides et al.
Interaction Design for Mobile Multimedia Systems for Display of Digital heritage in Ecosystems of Historic Churches	Poster of "2nd International Conference on Science and Engineering in Arts, Heritage and Archaeology SEAHA", University of Oxford, GB, June, 2016	V.Nikolakopoulou, D.Kalliabetsou

Name	Publication	Authors
Educational use of 3D models and photogrammetry content; the Europeana Space project for Cypriot UNESCO Monuments	In Proceedings of Fourth International Conference on Remote Sensing and Geoinformation of Environment', Cyprus, April, 2016	Marinos Ioannides et al.
Implementing multi-touch tables into classroom: In what ways are students engaged in an interactive mathematical activity 'around the table'?	Proceedings of the British Society for Research into Learning Mathematics, Manchester GB, February, 2016	V.Nikolakopoulou
Mixed Reality and Gamification for Cultural Heritage, Chapter 6	Copyright 2017, Publisher Springer International Publishing, Copyright Holder Springer International Publishing AG, DOI 10.1007/978-3-319-49607-8	<i>Editors</i> M.Ioannides N.Magnenat-Thalmann G.Papagiannakis
Evaluation of an e-learning platform for UNESCO WHL monuments in Cyprus	In Proceedings of ITN-DCH Final Conference on Digital Cultural Heritage, Olimje, Slovenia, May 2017, Springer (Under Publication)	V.Nikolakopoulou et al.

E. Added Value to my Future Research Career:

The training I am receiving from Digital Heritage Research Lab, in combination with ITN-DCH, is crucial to my future career. Aside from the knowledge gained in terms of semantic representation, knowledge engineering, archaeological and architectural documentation, 2D/3D digitization and 3D modeling technologies, the fellowship provides research presentations, public outreach and networking with researchers from other disciplines. The extensive attendances and active participations at conferences, workshops and summer school, have provided me with a broader view of the DCH domain and helped me understand my work as a researcher in a multidisciplinary field and the approaches that I have to develop concerning my research in connection with other professionals. In addition, the project's concept has entirely changed my scientific perspectives. The connection and communication with the other fellows, supervisors and institutions have enlarged my research context by fulfilling it with new research paths and ideas.

My exposure to other researchers' work, have helped me to develop my English language, presentation and communication skills and transcended my national point-of-view concerning my research, to an International and European one. Extensive participation in conferences and workshops to network with other researchers and to present research results will augment my training and experience. Moreover, writing scientific articles and conference papers has already began, with publications in Conference Proceedings relevant to Photogrammetry and Education.