

Academic offer

Partner: University of Patras

Department: Electrical and Computer Engineering

Field: Engineering, other

Level: Doctoral Research Position (Mobility)

Subject of Doctoral Research: Learning in Museums through location-based games

Aim: Modern museums aim at enriching their visitor experience using ubiquitous computing environments and at the same time involving them in content creation, promoting a participatory culture. The objective of this PhD research is to study user experience in such settings through multiple perspectives and define methods and technologies that facilitate such an objective. In particular, we research and then design and study playful learning activities for museum visitors. This study will investigate how the organization is involved, and how the relation with the audience develops, as through such activities the visitors participate in content creation and support the cultural heritage organization in tasks like description of the exhibits, tagging, expressing preferences, linking and grouping exhibits, defining trails. This dual nature of these activities (engaging the users and aiming at their participation in content creation) will be studied. Social aspects of the visitors' behaviour and the learning effect of the process will be also the focus of the research. The outcome will be a proposal of new methods and technology that involves both mobile onsite and distant access to the cultural heritage content and will influence both the cultural heritage organizations and the visitors. Methods for design and evaluation of such technologies will also be proposed. The playful activities designed will be based on a number of established templates that will be able to generate new activity instances for different cultural sites. A typical such template will involve narratives that necessitate active participation of the visitors in them through role playing and interacting with the exhibits. Empirical studies will be undertaken that involve design of templates and games and evaluation of the relating user experience in various cultural heritage sites (e.g. museums).

Pre-requisites: Degree in Electrical or Computer Engineering, or Degree in Computer Science with Masters in Software Engineering, or Software Technologies, or Human-Computer Interaction, or other similar areas.

Proficiency in English (level B2)

University of Patras – Electrical and Computer Engineering Department

Human-Computer Interaction Group

General Description: This is a centre of excellence for human-computer interaction theoretical and applied research, with special emphasis on mobile learning environments. The group has a special interest in studying user interaction with mobile and ubiquitous computing systems and collaboration support technologies. It has developed tools and methods for usability evaluation and information architecture of web sites, measuring user experience, aesthetics, and web accessibility.

More information: <http://hci.ece.upatras.gr>

Supervisor and Expertise: Prof. **Nikolaos Avouris**, Group Leader (design and teaching of post-graduate and undergraduate courses in human-computer interaction, supervisor of 15 completed PhD projects, leading researcher in many funded research projects)

Key Facilities and Infrastructure: A fully equipped usability lab for conducting user studies, expertise in design and evaluation of mobile applications with emphasis on mobile games.

The fields of research activities of the **Mechanical Engineering and Aeronautics Department** of the University of Patras may be divided into 4 fields which are linked to the activities of the 4 divisions of the Department. They are:

- 1) The research activities of the Division of Applied Mechanics, Technology of Materials and Biomechanics, are focused on leading technical areas such as, aerospace materials and aerostructures, composite materials, wind-turbine rotor structures, nanomaterials and nanomechanics, advanced computational mechanics, bio- and tissue-engineering, NDT, structural health monitoring and smart materials. The majority of conducted research receives competitive funding from national and EU sources, thus maintaining direct interactions with European Universities, Research Centers and Industry.
- 2) Indicative research regions of the Division of Energy, Aeronautics and Environment include: thermodynamics, fluid mechanics, fluid dynamic machines, combustion, heat, energy and mass transfer, systems of production, transformation and disposal of energy, aerodynamics, mechanics of flight, computational fluid dynamics and thermodynamics, aeroacoustics, aircraft noise, technologies of propulsion systems, design technologies of land, air and space vehicles, nuclear technology, renewable sources of energy, natural gas technology, multi-phase flows, environmental technologies.
- 3) Regarding research activities of the Division of Design and Manufacturing, focus is given to the following fields: Engineering Design - Flexible Manufacturing Systems - Statistical Qualitative Control of Production - Planning, programming and Control of Production Systems - Artificial and Computational Intelligence - Robotics - Mechatronics - Computer Graphics - Laser Technologies for Material Processing - Techniques for Rapid Prototyping - Machine Tools and Reliability Control - Methods and Techniques for Fault Identification - Dynamics of Mechanical Systems - Design of Biomedical Systems
- 4) The research activities of the Division of Management and Organization Studies, include: operations and production management, strategic management, Total Quality Management, innovation and technology management, technology policy, management information systems, computer-assisted learning systems, computer-assisted cooperation systems, industrial relations and related legal issues, operational research and systems science, supply chain management and logistics, economic analysis, applied statistics, quantitative methods, ergonomics, occupational health and safety, critical management studies, industrial sociology, industrial ecology, modeling and simulation, product development process management.