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***WORKSHOP PROGRAM***

**MARK1 - A Decision Support System for the Early Detection of Malignant Melanoma**

 MEDISP Lab



**Wednesday 11, November 2015**

THE PROJECT “MARK1- A DECISION SUPPORT SYSTEM FOR THE EARLY DETECTION OF MALIGNANT MELANOMA” WITH REF. NUMBER ISR\_3233, is under THE BILATERAL COOPERATION BETWEEN GREECE & ISRAEL ACTION 2013-2015 and HAS BEEN co-FUNDED BY  the EUROPEAN union and THE GENERAL SECRETARIAT FOR RESEARCH & TECHNOLOGY, MINISTRY OF EDUCATION, RESEARCH AND RELIGIOus Affairs  OF THE HELLENIC REPUBLIC.

**The workshop:**

The scope of the MARK1 workshop is a) to increase the level of public awareness regarding early detection of melanoma, b) to increase the overall visibility of the MARK1 project to the scientific community and c) to present the scientific results following the application of MARK1 to real world data.

**Venue:**

The workshop will be held at the premises of the Biomedical Engineering Department of TEI of Athens (<http://www.teiath.gr/index.php?lang=en>). TEI of Athens is located near the center of Athens, is easily accessible by public transportation and metro and may easily attract numerous scientists and students who are located at its premises (<http://www.bme.teiath.gr/en_contact.html>).

**Registration/Workshop Fees:**

Workshop registration and participation is free of charge. ***Certificate of participation will be given to all registered participants.***

**Contact information:**

Associate Prof. D. Glotsos,

Tel: +30 210 5385375

Email: [mark1workshop@gmail.com](mailto:mark1workshop@gmail.com)

**Workshop Website:**

[**http://medisp.bme.teiath.gr/mark1/event/workshop-on-melanoma-2015/**](http://medisp.bme.teiath.gr/mark1/event/workshop-on-melanoma-2015/)

**Organizing Committee:**

Prof. D. Cavouras (Chair), TEI of Athens, GR

Ass. Prof. G Sakellaropoulos, University of Patras, GR

Asst. Prof. P. Asvestas, TEI of Athens, GR

Asst. Prof. D. Glotsos, TEI of Athens, GR

Dr S. Kostopoulos, TEI of Athens, GR

E-K. Nikolatou, TEI of Athens, GR

G. Xenogiannopoulos, TEI of Athens, GR

Dr. K. Perakis, UBITECH Ltd., GR

**PROGRAMME**

**Wednesday 11 November 2015**

14:30 – 15:00 **Registration**

15:00 – 15:10 **Welcoming session**

* Prof. D. Cavouras, Department of Biomedical Engineering, TEI of Athens, Greece

15:10 – 16:10 **Oral Sessions**

* **15:10 – 15:30 MARK1 project description & Applications**

Dr. Konstantinos Perakis, UBITECH Research Department, UBITECH Ltd., Athens, Greece

* **15:30 – 15:50 Early stage detection of melanoma**

Theophilos Sakkis Ph.D., Valfour 1, Aegion Dermatology center

* **15:50 – 16:10 Decision Support System technologies towards early stage detection of melanoma**

Asst. Prof. D. Glotsos, Medical Image and Signal Processing Lab, Department of Biomedical Engineering, TEI of Athens, Greece

16:10 – 16:40 **Discussion -** **Round table**

16:40 – 17:20 **MARK1 platform demonstration**

17:20 – 17:30 **Closing of workshop**

**ORAL SESSIONS**

**ABSTRACTS**

**MARK1 project description & Applications**

Dr. Konstantinos Perakis

UBITECH Research Department, UBITECH Ltd., Athens, Greece

**Keywords:** Melanoma detection, mobile application, web interface, decision support systems

***Abstract***

The scope of the current session is to present to the target audience the scientific and technological scope of the MARK1 project, which is to provide a holistic solution aiming at addressing the need for early and accurate detection of skin lesions. In order to achieve this MARK1 introduces a screening solution that is easily accessible by the general public with the guidance, supervision and inspection of the primary care physician. MARK1 facilitates the accurate diagnosis ensured by a combination of new technology\ algorithms and specialist supervision. The development efforts include the design and development of a dedicated smart phone application to be used by the patient, and a web interface to be used by the primary care physician. The web interface of the physician integrates a set of image processing utilities and is interconnected through web services to the MARK1 Decision Support System which incorporates designated algorithms and the business logic behind the image analysis.

**Early stage detection of melanoma**

Theophilos Sakkis Ph.D.

Valfour 1, Aegion Dermatology center, Greece

**Keywords:** Melanoma, Diagnosis, ABCD

***Abstract***

Malignant melanoma represents a skin malignant tumor arising from melanocytes. It is the most serious oncologic problem in Dermatology because it affects a relatively younger population and has the tendency to metastasize at an early stage. The earliest possible recognition of melanoma represents the most important goal for dermatologists dealing with skin cancer screening. The evaluation of pigmented skin lesions is mainly based on the ABCD clinical rule (asymmetry in shape, border irregularity, color variegation and diameter).

**Decision Support System technologies towards early stage detection of melanoma**

Asst. Prof. Dimitris Glotsos

Medical Image and Signal Processing Lab, Department of Biomedical Engineering, TEI of Athens, Greece

**Keywords:** Melanoma, Diagnosis, Decision Support Systems

***Abstract***

Melanoma comprises one of the most lethal and difficult to treat forms of cancer with more than 100 000 cases worldwide each year. The annual incidence rate of the disease has an increasing tendency, which is attributed to modern lifestyle and long exposure to ultraviolet radiation that has been identified as among the most influential factors for triggering the disease. Early stage detection of melanoma has been shown as the most crucial step for treating the disease, since at early phases melanoma seems to be more vulnerable to available treatments. Computer-based image analysis and Decision Support Systems (DSS) have been proposed as potential second opinion tools to enhance the accuracy of self-skin examination and guide patients towards the urgency of a physician visit. DSS systems rely on pattern recognition and artificial intelligence approaches in order to assess the nature of suspicious moles. The advent of smartphone technology has made feasible the incorporation of DSS into web applications and Application Program Interfaces (APIs). Such systems may offer complementary information to the physician, assisting towards early diagnosis and reduction of falsely characterized as disease-free cases for people who actually suffer by the disease. Additionally, such systems may alert patients to visit the dermatologist for suspicious moles increasing the probability of early stage detection of the disease. The purpose of this study is to present current decision support system technologies available for melanoma detection.