

Title of the workshop: ML-assisted and 5G-enabled e-Health Systems

Date: 31 January 2020

Workshop Organisers:

- Prof Christos Politis (Kingston University, c.politis@kingston.ac.uk)
- Prof Vasilis Argyriou (Kingston University, vasileios.agyriou@kingston.ac.uk)
- Dr Kostas Danas (WWRF, costas.danas@gmail.com)
- Dr Nikos Grammalidis (ITI-CERTH, ngramm@iti.gr)
- Dr Konstantinos Votis (ITI-CERTH, kvotis@iti.gr)

Venue: ITI-CERTH, Thessaloniki, Greece (<https://www.certh.gr/root.en.aspx>)

Scope and topics of the workshop

e-Health services are in need of continuous development to cope with the increase in aging population and reduction in available resources. Advancement in technology has been an important factor in such development of the e-Health services delivery. Advanced technologies such as 5G, AI and Machine-Learning will play an important role in the efficient and effective delivery of such services. While the 5G standards are in place, the challenge to bring the 5G into services and business remains huge. At a time when spending on public services has never been under greater scrutiny, 5G will allow organisations related to health sector to utilise new services to improve efficiency, productivity and to save money in the long term, helping to automate processes otherwise taking up large proportions of budget and time. At the same time the engagement of these technologies in patient care have the ability to significantly improve care and even in emergency situations save patients' lives. The advent of 5G presents an opportunity to transform e-Health services, enabling them to share a much wider range of communications data including video. Furthermore, machine learning applications related on scene and video analysis, augmented reality for training and information sharing are technologies that will benefit from 5G networks providing improved and real time solutions. This will have a significant impact on effectiveness and efficiency of the related service delivery. This workshop will bring together technologists, researchers and medical professionals to debate on the use of advances technologies in support of healthcare systems and providers.

The following represent a list of topics, but not limited to:

- Trends and challenges in 5G based e-Health systems.
- Ultra-reliable and low latency communication (URLLC) based health monitoring.
- Low latency communication in mobile Telesurgery.
- Privacy-aware massive machine type communication (mMTC) based IoT communications.
- QoE based Telesurgery in 5G and beyond.
- QoE-aware telemedicine for emergency networks.
- Artificial intelligence-based Computer-aided assistance for Telemedicine applications.
- Network slicing for emergency networks.
- Enhanced mobile broadband (eMBB) based mobile Telemedicine.
- Mobile edge computing in computer-aided Telemedicine.
- AR/VR for healthcare, transport and other applications.

- 3D image sensing, processing, and display.
- Interaction Techniques and User Interfaces.
- 3D-Reconstruction and scene analysis based on images or other forms of data collected from the real environment/ objects.
- Tracking Techniques: methods for tracking a target object/ environment via cameras and sensors, and estimating viewpoint poses.
- Recognition: recognition and detection technology that could be used in AR/VR applications to improve user experience.
- ICT-based early detection of mental disorders and supporting interventions based on ICT
- Personalized systems for healthy living.

Duration of the workshop: Full-day

Agenda:

9.00 – 9.15: Welcome and Opening Statements (Prof C Politis and Dr N Grammalidis)

9.15 – 9.30: Brief presentation of the WWRF EMW Working Group (Dr K Danas)

9.30 – 10.00: **Keynote speaker:** “Smart 5G Ambulance” **Dr Arslan Usman** (Pangea, UK)

10.00 – 10.30: **Keynote speaker:** “Transforming Medical Imaging and Radiology” **Dr Harry Hatzakis** (Biotronics3D, UK)

10.30 – 11.00: **Keynote speaker** (TBC)

11.00-11.30: Coffee break

11.30 – 12.30: Session I: Machine Learning for e-Health

11.30 – 11.50 “PROTEIN - Personalized Nutrition for healthy living” **Dr Kosmas Dimitropoulos** (Centre for Research and Technology Hellas)

11.50 – 12.10 “title” **Dr Antonis Lalas** (Centre for Research and Technology Hellas)

12.10 – 12.30 “DARE – Distributed Autonomous and Resilient Emergency Management” **Dr Rafay Ansari** (Kingston University, UK)

12.30 – 12.50 “Passive Remote Early Detection of Parkinson's Disease in the context of i-PROGNOSIS” **Dimitris Iakovakis** (Aristotle University of Thessaloniki, Greece)

13.00 – 14.00: Lunch break

14.00 – 16.30: Session II: 5G enabled e-Health

14.00 – 14.30 “Time matters: The use case of stroke” **Dr Christos Bakirtzis, MD** (AHEPA Hospital, Greece)

14.30 – 15.00 “title” **Prof Pantelis Aggelidis** (Vidavo, Greece)

15.30 – 16.00 “title” **Simon Fletcher** (Real Wireless, UK and UK5G)

16.00 – 16.30 “title” **Dr Peter Beaumont, MD** (Kings College Hospital, UK)

16.30 – 17.00: Coffee break

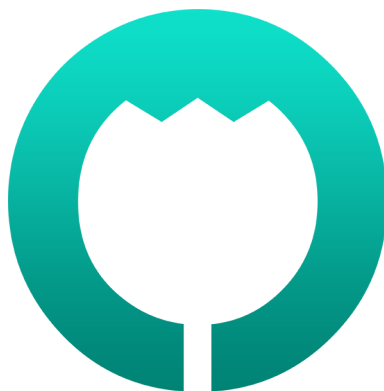
17.00 – 17.30: Concluding Remarks

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