Turkey in H2020 eHealth

Visit to CERTH - ITI Feb 2020

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İTÜ Smart Interaction and Machine Intelligence (SiMiT) Lab

Hazım Ekenel, ekenel@itu.edu.tr, http://web.itu.edu.tr/ekenel/

- Main expertise
  - Keywords: Computer Vision, Deep/Machine Learning, Biometrics, Security & Surveillance Apps
  - 100+ pubs, ~3000 citations, https://scholar.google.com.tr/citations?user=LfIDj68AAAAJ&hl=tr
  - Extensive experience in facial image analysis (face id, expression analysis, face modelling)
  - Experience in various health oriented applications of computer vision and machine learning / deep learning (skin lesion segmentation, medical data analysis, etc.)
- SC1-DTH-04-2020: Intl. coop. in smart living environments for ageing people
  - Detecting, tracking & analysis of elderly in a smart living environment
  - "Indoor Living Space Improvement: Smart Habitat for the Elderly" project
- AI for the smart hospital of the future
  - Perception of individuals in a smart hospital, patient monitoring
  - “VIPSAFE: Automated Visual monitoring for Improving Patient SAFEty” project
- ICT-46-2020: Robotics in Application Areas and Coordination & Support
  - Perception of robot’s interaction partner & visual sensing of robot’s environment
  - “Organic Machine Learning” project

NETAS Refik Fatih Ustok, fustok@netas.com.tr

- Main expertise
  - ○Telecom (5G, multimedia, VoIP, WebRTC, unified comm., cloud computing, MEC)
  - ○Internet of things and big data platforms
  - ○Web and mobile applications: E-Government, E-Ticket, Business Intelligence

Netas has been funded for **42 R&D projects by National and EU agencies, within the last 5 years**.

- Call of interest: Calls that we can join as a technology provider
  - **DT-ICT-12-2020**: AI for the smart hospital of the future
  - **SC1-DTH-02-2020** Personalised early risk prediction, prevention and intervention based on AI and BD technologies
  - **DT-TDS-04-2020** Digital Diagnostics – tools for supporting clinical decisions by integrating diagnostic data

Products:

- ○ION: A platform for massive IOT networks: bit.ly/ionbynetas
- ○Big Data Platform: bit.ly/bigdatabynetas
- ○VIO: video conferencing solution: bit.ly/viobynetas (will support holographic comms.)

Related EU Project:	**Related National Project:**
Health5G: health5g.eu	ASOS: bit.ly/AsosNetas

Deniz Atak

deniz.atak@tiga.com.tr

- Main expertise
  - Tiga is one of the main e-health infrastructure providers in Turkey
    - Health Analytics
    - Deep Learning
    - Smart Living Environments for Elderly
- **SC1-DTH-02-2020** Personalised early risk prediction, prevention and intervention based on Artificial Intelligence and Big Data technologies
  - Interoperability of Healthcare Systems/ Patient-centered care systems/ ML, Big Data on Healthcare/Track & Tracbility of Pharmaceuticals
  - National Healthcare Data Exchange System, E-Pulse, E-Prescription, Pharmaceutical T&T
- **SC1-DTH-04-2020** International cooperation in smart living environments for aging people
  - Elderly care at home, smart homes, sensors, IoT, machine learning, AI, Big Data
  - Closer, Smart Home, FiQare
- **DT-ICT-12-2020**: AI for the smart hospital of the future
  - Patient-centered care systems, AI, ML, Big Data in healthcare, interoperability of Healthcare Systems
  - Closer, Smart Home, FiQare, National Healthcare Data Exchange System, E-Pulse, E-Prescription, Pharmaceutical T&T

METU Computer Vision and Deep Learning Lab

Alptekin Temizel, atemizel@metu.edu.tr

ODTÜ METU

- Main expertise
  - Computer Vision: Egocentric Activity Recognition; Hyperspectral Image Analysis
  - Deep Learning: Object Detection, Explainable Machine Learning, Endoscopic Images Artefact Detection, Generative Adversarial Networks
  - GPU Computing: Optimisation, Real-time Embedded Systems, Deployment of Deep Learning Based Applications
  - Video Surveillance: Anomaly Detection, Behaviour Analysis
- SC1-DTH-04-2020: International cooperation in smart living environments for ageing people
  - Egocentric activity recognition
  - Anomaly Detection, behaviour analysis
  - Real-time GPU based embedded systems, deployment of deep learning

METU Spatial Audio Research Group (SPARG)

Huseyin Hacihabiboglu, hhuseyin@metu.edu.tr

- Main expertise
  - Audio and acoustic signal processing: Microphone arrays, speech enhancement, source localisation, source separation, acoustic mapping, speech emotion recognition
  - Immersive audio: 3D audio synthesis, reproduction, rendering, coding
  - Auditory perception: Psychoacoustics of spatial hearing
- Calls of interest:
  - SC1-DTH-04-2020: International cooperation in smart living environments for ageing people
  - Speaker and posture identification from intraspeech breathing sounds
  - Privacy-aware remote health monitoring by analysis of breathing
  - Microphone arrays home assistants in the smart living environments context

Data Mining Research Lab, Tugba Taskaya Temizel, ttemizel@metu.edu.tr

Research Areas:

- Data science: user profiling, experience in both working with small and big datasets
- Social computing: Understanding personal factors (traits, mood, etc) from multimodal data, modelling mobility behaviour of social groups based on refugee data
- Persuasive technologies (behaviour change support systems): understanding the relationship between intervention strategies and personality traits
- Information Quality Assessment: modelling information coverage, misinformation detection in health websites and social media

Calls of interest:

SC1-DTH-04-2020: International cooperation in smart living environments for ageing people *and*
SC1-DTH-02-2020: Personalised early risk prediction, prevention and intervention based on Artificial Intelligence and Big Data technologies

- Related experience in a project supported by The Scientific and Technological Research Council of Turkey under Tubitak BIDEB-2219. Collaboration with *University of Birmingham* and *University College London (UCL)*
- Behaviour analysis using mobile sensors, understanding social context and personality traits
- Mixed models, deep networks, spatio-temporal models

METU - Entertainment Computing and Interactive Systems Lab
Elif Sürer, e-mail: elifs@metu.edu.tr web: http://blog.metu.edu.tr/elifs

- Main expertise
  - Serious Gaming
  - Virtual Reality / Augmented Reality / Mixed Reality / Extended Reality
  - Machine Learning
- **SC1-DTH-06-2020: Accelerating the uptake of computer simulations for testing medicines and medical devices**
  - 3D Modeling, Simulation and XR interaction
  - H2020 eNOTICE - https://www.h2020-enotice.eu/ (2017-now) Reusing the assets, scenario builder, Unity development and XR integration from the serious games developed for eNOTICE
- **SC1-DTH-04-2020: International cooperation in smart living environments for ageing people & DT-ICT-12-2020: AI for the smart hospital of the future**
  - Serious gaming, ICT applications for patients, bioengineering experience
  - FP7 REWIRE - https://www.rewire-project.eu (2013-2015) Experience with stroke and Neglect patients, multi-use serious game development, multi-sensorial interaction
- **SC1-DTH-02-2020: Personalised early risk prediction, prevention and intervention based on Artificial Intelligence and Big Data technologies**
  - Predictive analysis, adaptive systems
  - FP7 REWIRE and ERC NEOGENE https://neogene.metu.edu.tr (2018-now) Prediction based on DNA sequences and material culture data

Network Modeling Lab - Nurcan Tuncbag,

ntuncbag@metu.edu.tr http://mistral.ii.metu.edu.tr

- Bioinformatics and Computational Personalized Medicine
  - Graph Theory, Optimization and Graph Visualization
  - Multi-Omic Data Integration
  - Learning-based approaches to predict phenotype from genotype in diseases.
  - Computational frameworks to transform patient driven big data to use for early diagnosis of cancer at molecular level, accurately stratify patients to optimize treatment strategies, revealing drug resistance mechanisms.
- Experience:
  - OpenMultiMed / COST Action / http://openmultimed.net/
  - ERC Consolidator (Submitted): Leveraging Molecular Signatures of Cancer to Guide PERSONAlized Therapeutic Strategies.
- **Specific Topics and Calls**
  - **SC1-DTH-02-2020:** Personalised early risk prediction, prevention and intervention based on Artificial Intelligence and Big Data technologies
  - **SC1-BHC-17-2020:** Global Alliance for Chronic Diseases (GACD) - Prevention and/or early diagnosis of cancer
  - **SC1-BHC-06-2020:** Digital diagnostics – developing tools for supporting clinical decisions by integrating various diagnostic data
  - **SC1-DTH-12-2020:** Use of Real-World Data to advance research on the management of complex chronic conditions

HUMATE Human Machine Teaming Lab

acarturk@metu.edu.tr, perit@metu.edu.tr

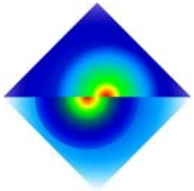
- Eye tracking and brain imaging facilities with multisensor synchronization
  - A well-established eye tracker farm (from low-resolution and wearable eye trackers to high-resolution desktop eye trackers and VR eye tracking)
  - An integrated multisensor recording environment (fNIRS Functional Near Infrared Spectroscopy, GSR, EEG, EMG, EOG)
  - Ongoing studies at the overlap between neuroscience and cybersecurity
- Experience:
  - IRIS, an FP7 Marie Curie Industry Academy Partnership Project, http://iris-interaction.eu/
  - COST IS1404 - Evolution of reading in the age of digitisation (E-READ), https://www.cost.eu/actions/IS1404/
  - A gaze-mediated framework for multimodal Human Robot Interaction (Gaze4HRI) Polish-Turkish Partnership project
- **Topics and Calls**
  - Artificial Intelligence and Technologies for Digitising European Industry and Economy
  - Digital transformation in Health and Care
  - Trusted digital solutions and Cybersecurity in Health and Care

SRDC A.S, Gokce B. Laleci Erturkmen, gokce@srdc.com.tr

- Main expertise in eHealth
  - Semantic and Technical Interoperability between Health IT Systems and Medical Devices, Open source, secure, scalable HL7 FHIR Repository
  - Integrated Care and Chronic Disease Management Systems, Clinical Decision Support systems enabling personalized medicine, Business Intelligence
  - Privacy Preserving Data Mining, Federated Learning, Predictive Analytics
- Personalized risk prediction, prevention and intervention with AI and BD [SC1-DTH-02-2020]
  - Predictive Analytics, Big Data Analytics Platform, Clinical Decision Support Systems, Just-in-time Adaptive Bahaviour Change Interventions
  - Power2DM, Medolution, FAIR4Health Projects
- Use of real-world data to advance research on the management of complex chronic conditions [SC1-DTH-12-2020]
  - Chronic Disease Management Platform, Interoperability Framework, Decision Support Systems and Privacy preserving distributed learning framework
  - C3Cloud, ADLIFE and FAIR4Health projects
- Digital Diagnostics – tools for supporting clinical decisions by integrating various diagnostic data [SC1-BHC-06-2020]
  - Interoperability with EHRs and medical devices, Clinical decision support systems, Automation of Evidence based guidelines
  - C3Cloud, iCARDEA, SAPHIRE Projects

Demir Enerji - Ömer Akyürek, oakyurek@demirenerji.com

- Main expertise
  - Climate Change Strategies
  - Smart Cities and Energy Management
  - Urban Strategies Strategies Towards Sustainability
  - 7 ongoing H2020 Projects -126M€ (4 Smart City Project) - Demo site leadership & WP leadership
- LC-SC3-EC-5-2020 (CSA -September 2020 -single stage)
  - Supporting public authorities in driving the energy transition
    - Ministry of Urbanization and Environment have allocated a large amount of budget for EE in public buildings. A synergy could be established.
- LC-SC3-EE-13-2020 (IA -September 2020 -single)
  - Enabling next generation of smart energy services valorising energy efficiency and flexibility at demand-side
    - Already established ideas on how to address the call requirements with reach to potential demo-sites (residential tertiary), DSO's, UNVs. SMEs, ICT, SMEs and Energy Communities etc



Bogazici University, Antennas and Propagation Research Lab,
Sema Dumanli, semadumanli@gmail.com

- Wearable and implantable sensors
  - Reconfigurable antennas for IoT devices (Holder of 3 US patents, 4 patent applications)
  - Electromagnetic modelling near human body
  - Biodegradable and biocompatible device development
- We are interested in partnering in proposals where we can focus on the design and development of novel sensors/devices.
- SC1-BHC-06-2020
  - Skin adhesive resonators/antennas
  - https://glakolens.com/
- SC1-BHC-34-2020
  - The design of implantable biodegradable passive sensors detecting post-surgical infection (mg on silk example)
  - SImpliFy-B (Seal of Excellence: MSCA IF): Smart orthopaedic implant detecting infection.

Tepecik Training and Research Hospital

H. Hakan SAKAOGLU hhsakaoglu@yahoo.com

TEPECIK TRAINING AND RESEARCH HOSPITAL

●Main Expertise

○AI in medical laboratories (Phlebotomy, Pre analytic, post analytic laboratory process)

○Oncology, Neurological Disesas, Children Diseases (Stoke, AD, etc), Robotic Surgery

○Big data analysis

●Calls of interest:

●DT-ICT-12-2020 AI for the smart hospital of the future

●DT-TDS-04-2020 AI for Genomics and Personalised Medicine

○AI in phlebotomy unit (No more identification or tube errors. All stages recorded. Performance tracked. OGTT timings achieved.Patient waiting times predicted and given to patients at the time of check in. Human resources required predicted. Number of patients and waiting space are reduced, significantly.)

○http://phlerobo.labenko.com/EN

○https://www.sagliktayapayzeka2020.org

●SC1-BHC-06-2020 Digital diagnostics – developing tools for supporting clinical decisions by integrating various diagnostic data

○Izmir Trauma Project (Aim is to educate health staff with VR. This project has three important pillars. To establish hospitals' rating point under trauma, to store statistical analysis for the future, to establish a decision support system.○www.travma.org

Turkish Ministry of Health - M. İlkay KAYNAK, ilkay.kaynak@saglik.gov.tr

Main expertise

- Experience in PCP, Big Data, PHR systems
- 2 PCP Coordinatorship, e-Nabız PHR (14 M Users)
- Chronic Diseases Management
- Vast pilot application opportunities

- Pre-commercial Procurement for Digital Health and Care Solutions
  - Procurer partner, pilot site arrangement, technical expertise
  - ProEmpower (PCP-Diabetes), HSMonitor (PCP-Hypertension), STAMINA (pilot application)
- Personalized early risk prediction, prevention and intervention based on Artificial Intelligence and Big Data technologies
  - Technical expertise and experience
  - e-Nabız PHR (14 M Users), SINA (High Tech AI-Assisted DSS)

Bogazici University - Dr. Mehmet Turan

mehmet.turan@boun.edu.tr

- Medical robotics and Artificial Intelligence Lab at the Institute of Biomedical Engineering at Bogazici University, Turkey
- Team members: 5 PhD students, 2 master students
- Distinctions/Research areas / activities:
  - Artificial Intelligence in Medicine, Deep learning and Reinforcement Learning , Imitation Learning, Transfer Learning (Domain adaptation, generalization, confusion etc), Simulating Medical Robot Operations..
  - Localization, Mapping, Control, Path Planning and Navigation for (Medical) Robots, Reinforcement Learning for control of complex-to-model medical robotic systems.
  - Medical image-2-image translation using deep learning (supervised, unsupervised and weakly supervised) : e.g rgb-2-depth, low-2-high, segmentation, synthetic data generation etc...

Concortium already started yesterday: Accelerating the uptake of computer simulations for testing medicines and medical devices : Unity based simulation environment for autonomous endoscopic device platform (Maya, Unity, Blender, Unreal, Physical Gaming Engines etc.)

CERTH: Dr. Konstantinos Votis (Researcher Grade B)/ Dr. Antonios Lalas

ETH Zurich: Prof. Dr. Mehmet Fatih Yanık

EPFL: Assistant Professor Mahmut Selman Sakar

Harvard University Assistant Professsor Faisal Mahmood

Louisiana State University: Assistant Professor Dr. Hunter Gilbert

Johns Hopkins University: Associate. Prof. Nickolas Durr

Coimbra University: Prof. Dr. Helder Araujo

Instituto Politécnico de Leiria, Leiria (ESTG): Assistant Professor Luis Perdigoto

Oxford University: M.Sc. Yasin Almalıoglu

Bogazici University: Assistant Professor Mehmet Turan

CERTH-ITI MKLab - athstavr@iti.gr

CERTH
CENTRE FOR
RESEARCH & TECHNOLOGY
HELLAS

- Main expertise
  - IoT platform to collect wearable, smart home, sleep sensor, National Prescription data etc.
  - Semantic interoperability/ontologies & analysis to extract symptoms/activities/quality of life
  - Home pilots & lab clinical trials with pharma & national Alzheimer's & MS assoc.
- SC1-DTH-02-2020
  - BD analytics of medical/IoT & Social/Web, Integration/Interoperability/Ontologies and reuse of AUTH's i-PROGNOSIS
  - Audio/image/wearable/sleep/medical/EEG data from elderly Dem@Care, RADAR-AD and MS
- SC1-DTH-04-2020 (Canada)
  - Above assets + existing Canadian cluster
- SC1-BHC-06-2020
  - Clinical trials with big pharma industry in in medical projects: RADAR-AD, Trials@Home
- DT-ICT-12-2020
  - The above +Agent (KRISTINA) + EEG/Eyes&Mind (MAMEM) + Intelligent Prescription