



## Tentative Program

### TUESDAY, 5<sup>th</sup> AUGUST

14:00 – 16:00 Registration

### WEDNESDAY, 6<sup>th</sup> AUGUST (morning)

09:00 REGISTRATION

10:15 **Welcome address** by Fethi CALISIR

10:30 **Keynote Speech: "Data Models for Evaluation and Analysis of Hospital Operations Productivity", Sanchoy Das, F – 134**  
**New Jersey Institute of Technology, Newark, USA**

*Hospitals typically evaluate performance in two dimensions: clinical outcomes (quality of care/process of care) and financial stability (reimbursement rates and profitability). In the face of both increased demand for hospital services and the increased cost of hospital care, there is now a third dimension which focusses on hospital operations, specifically the productivity by which patient care activities are executed. Classical systems engineering methods are now being widely used to develop performance metrics and related analytical models that study hospital operations. A key obstacle to such analysis is defining units of output for hospital operations, and creating datasets which provide reliable and multihospital data in a common format. Traditionally, Adjusted Patient Days (APD) has been used as a valid estimator of care activity, but APD assumes all patients are equivalent. Comparative assessments across hospitals can therefore not be made effectively. The most common and effective tool in hospital operations analysis today is Data Envelopment Analysis (DEA), and researchers have reported insightful studies using the APD base combined with other data collected for one or a group of hospitals.*

*To support future research there is a need for standardized hospital output measures. From a clinical perspective the output is clear, it is a patient that has received acceptable levels of care. Due to the variance in patient acuity and care paths for diagnosis groups the net hospital inputs are not equivalent to the patient output rate. The development of a hospital unit of care (HUC), defined as the resources required to provide one general medical/surgical inpatient day compensates for a significant part of the above variances. The HUC models hospitals as a series of patient centric activities designed to provide the needed quality of care. Five HUC components are proposed: (i) case-mix adjusted inpatient days (ii) intensive care (iv) nursery (v) outpatient care and (vi) ancillary services. The HUC is compatible with the Medicare Cost Report data format. Application to over a 1000 US hospitals shows that the HUC is better correlated than APD to hospital operating costs, and hence is a superior basis for analysis. Further, the HUC is drillable in that it provides data for every operational unit and sub-unit in the hospital. The HUC thus allows both detailed lateral and vertical analysis, and is easily integrated into existing approaches such as DEA.*

Sessions

1

**IT and Information Systems  
Management**

F-133

*Chair: Selim Zaim*

2

**Healthcare Engineering Education &  
Training**

F-135

*Chair: Levent Atahan*

11:30 **A Mobile Asset Tracking System for Healthcare Facilities**  
*Cevikcan E., Istanbul Technical University, Turkey*  
*Dumlupinar K., ITECH, Turkey*  
*Ustundag A., Istanbul Technical University, Turkey*

**Small Sized Knapsack Ventilator Bundle: Comparison of  
Hospitals in Turkey and Implementation Ideas**  
*Cal M., TUBITAK - TUSSIDE, Turkey*

12:00 LUNCH BREAK



WEDNESDAY, 6<sup>th</sup> AUGUST (afternoon)

Sessions	3 Modeling, Simulation, and Optimization F-133 Chair: Emre Cevikcan	4 Quality and Process Improvement in Healthcare F-135 Chair: Alp Ustundag	
13:00	<b>A Simulation Based Decision Support Tool for Hospital Bed Capacity Planning</b> <i>Sönmez V., Hacettepe University, Turkey</i> <i>Dasdemir E., Hacettepe University, Turkey</i> <i>Aydin O.M., Hacettepe University, Turkey</i> <i>Testik M.C., Hacettepe University, Turkey</i>	<b>How applicable are University College London Systems Engineering (UCLse) principles in Turkish healthcare system?</b> <i>Kaya G.K., University College London, UK</i> <i>Urcan E.K., Kingston University London, UK</i> <i>Kaya H.T., Necmettin Erbakan University, Turkey</i>	
13:30	<b>A System Dynamics Application to Resource Management in Neonatal Care Services</b> <i>Lebcir R., University of Hertfordshire, UK</i> <i>Demir E., University of Hertfordshire, UK</i>	<b>Global Health Systems: An African Case Study</b> <i>Gray J., University of Southern California, USA</i>	
14:00	<b>Classification of Parkinson's Disease Using Complex-Valued Neural Networks</b> <i>Peker M., Samandira EML, Turkey</i> <i>Sen B., Yildirim Beyazit University, Turkey</i> <i>Delen D., Oklahoma State University, USA</i>	<b>An Evaluation of Servqual and Customer Satisfaction in Health Care Industry</b> <i>Zaim S., Istanbul Technical University, Turkey</i> <i>Tarim M., Marmara University, Turkey</i> <i>Zaim H., Fatih University, Turkey</i>	
14:30	BREAK		
Sessions	5 Human Factors and Ergonomics in Healthcare F-133 Chair: Mine Isik	6 e-Health and m-Health F-134 Chair: Mehmet Gumus	7 Health Economics F-135 Chair: Ozge Surer
15:00	<b>Relative Importance of Usability and Functionality Factors for Computer-assisted Navigation System for Cryoablation of Kidney Tumors</b> <i>Calisir F., Istanbul Technical University, Turkey</i> <i>Basak E., Istanbul Technical University, Turkey</i> <i>Barkana D.E., Yeditepe University, Turkey</i>	<b>A Methodology to Compare Face-to-Face Learning and Distance Learning for Healthcare Tourism Continual Education Program</b> <i>Cebeci U., Istanbul Technical University, Turkey</i> <i>Dogan O., Istanbul Technical University, Turkey</i> <i>Calderone D.V., Istanbul Technical University, Turkey</i>	<b>Rapid Response System</b> <i>Ozturk K., TUBITAK - TUSSIDE, Turkey</i>
15:30	<b>Ergonomic Analysis for Design of Medical Devices: Modeling and Simulation</b> <i>Durgun B., Cukurova University, Turkey</i>	<b>mHealth Projects in Developed and Resource-Limited Settings</b> <i>Brown S., Carnegie Mellon University, USA</i> <i>Umutoni V., Carnegie Mellon University, USA</i>	<b>Different Types of Moral Hazard in Health Insurance</b> <i>Ecer S. Istanbul Technical University, Turkey</i>

17:00 – 19:00 Welcome Reception – Management Faculty Garden

Scan QR Code for google maps location





**THURSDAY, 07<sup>th</sup> AUGUST (morning)**

**09:00** REGISTRATION

**09:00** **Keynote Speech: "Current State-of-the-Art in Health Care Analytics: An Experiential Perspective", Dursun Delen, F – 134 Oklahoma State University, USA**

Undoubtedly, analytics is one of the most popular information trends of the recent history, both in business and science; most particularly in the healthcare and medical field. A strong testament to the potential of healthcare analytics is the increasing emphasis given to this field by the top funding agencies in the U.S. and abroad. For instance, National Institute of Health (NIH) and the National Science Foundation (NSF) collaboratively created a series of multi-million-dollar funding opportunities under the name of "Smart and Connected Health." The main reasons for this popular adoption of analytics in health care include:

- ❖ Need – increasing demand and competition coupled with decreasing resources forcing health care organizations to do more with less (i.e., be both effective and efficient).
- ❖ Technology availability – software/algorithms are becoming more sophisticated while simultaneously the hardware and infrastructure continues to become better, faster and less expensive.
- ❖ Data availability – data is ubiquitous. As the saying goes "we are drowning in data but starving for knowledge." Organizations that are effective in converting data into information and knowledge are those most likely to survive and thrive in these difficult economic conditions.
- ❖ Cultural shift – the reliance on data driven, fact-based actionable information is becoming more prevalent in health care. The sole reliance on experience and intuition are finally giving way to data and analytics in decision-making processes.

Center for Health Systems Innovation at Oklahoma State University is blessed with numerous scholars who are well known in the field of analytics. Having worked on several large scale analytics projects, CHSI is well positioned to be a leader in the field of health innovation. This presentation will offer a broad experiential perspective to the current and future trends in health analytics, and will provide exemplary research projects to further motivate the increasing popularity of the field.

**10:00** BREAK

Sessions

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Poster Session

**10:30** Early-Stage Dementia: Design of a Multi-Component Monitoring System for Patient Freedom of Movement

*Rahimi M., University of Southern California, USA*

*Vaughn-Cooke M., University of Maryland, USA*

Mayo Clinic Health Connection: Application of an m-Health tool to Support Clinical Practice Delivery

*Cook D., Mayo Clinic, USA*

Stress Relieving Technology Tools for Alzheimer's Patients

*Rahimi M., University of Southern California, USA*

*Kelliher K., University of Southern California, USA*

Clinical Process Improvement in Acute Myocardial Infarction

*Sahin G.M., TUBITAK - TUSSIDE, Turkey*

Quality Improvement to Prevent Venous Thromboembolism

*Sahin G.M., TUBITAK - TUSSIDE, Turkey*

Quality Improvement to Prevent Central Venous Catheter Infections

*Sahin G.M., TUBITAK - TUSSIDE, Turkey*

Emergency Medical Service Funding from Public Sources in the Czech Republic

*Halajcuk T., University of Defense, Czech Republic*

*Jezek B., University of Defense, Czech Republic*

*Prochazka M., University of Defense, Czech Republic*

Emergency Medical Service Coverage Evaluation Methods

*Jezek B., University of Defense, Czech Republic*

*Prochazka M., University of Defense, Czech Republic*

*Halajcuk T., University of Defense, Czech Republic*

*Vanek J., University of Defense, Czech Republic*

**12:00** LUNCH BREAK



THURSDAY, 07<sup>th</sup> AUGUST (afternoon)

**13:00** F-134 Panel Discussion – "Applying Engineering Concepts to Hospitals"  
*Moderator: Kirstin Ozturk*

**14:30** BREAK

Sessions

9

Healthcare Operations Research

F-133 *Chair: Behice Durgun*

**15:00** Territory Design for Family Doctors  
*Surer O., Istanbul Technical University, Turkey*  
*Yanik S., Istanbul Technical University, Turkey*

**15:30** Medical Imaging System Selection Using Fuzzy Axiomatic Design Approach  
*Supciller A.A., Pamukkale University, Turkey*  
*Kulak O., Pamukkale University, Turkey*

**16:00** When is it Optimal to Prescribe Antihypertensive Medications? An MDP Analysis  
*Gumus M., McGill University, Canada*  
*Zargoush M., McGill University, Canada*  
*Verter V., McGill University, Canada*  
*Daskalopoulou S., McGill University, Canada*

10

Engineering and Technology Management in Healthcare

F-135 *Chair: Sencer Ecer*

Multi Criteria Decision Making Problem for Selection of RTLS Technology for Hospitals  
*Budak A., Istanbul Technical University, Turkey*  
*Ustundag A., Istanbul Technical University, Turkey*

Determining the Correct Diagnosis and Appropriate Treatment Method on Keratoconus: a 3D Decision Support Application  
*Kaya H., Ministry of National Education, Turkey*  
*Cavusoglu A., TUBITAK, Turkey*  
*Cakmak H.B., Yildirim Beyazit University, Turkey*  
*Sen B., Yildirim Beyazit University, Turkey*  
*Delen D., Oklahoma State University, USA*

Selecting the Best Flux Alternative by Using AHP, ANP, FAHP, and FANP with a Proposed Decision Support Software  
*Ozturk N., Marmara University, Turkey*  
*Tozan H., Turkish Naval Academy, Turkey*

17:00 – 21:00 Gala Dinner – *Oba Restoran & Sultan Cafe*

Scan QR Code for google maps location





FRIDAY, 08<sup>th</sup> AUGUST (morning)

09:00 REGISTRATION

09:00 **Keynote Speech: "Two Applied R&D Projects in Health Insurance Domain in Turkey", Ilker Kose, CompuGroup Medical (CGM), Istanbul, Turkey**  
F – 134

The content of the speech will be as follows:

- CGM in Turkey
- The R&D Projects of CGM for the last 5 years
- The Collaborations with Universities
- More Details About Two R&D Projects:
  - ❖ Development of An Interactive Machine Learning Based Electronic Fraud and Abuse Detection System In Health Care Insurance
  - ❖ Dynamic Underwriting Management System in Health Care Insurance
- The Innovation Areas in Health Insurance Domain in Turkey
- Conclusion

Sessions **11** IT and Information Systems  
Management  
F-133 Chair: Evin Uzun Jacobson

**12** Healthcare Safety, Security, Reliability,  
and Risk Management  
F-135 Chair: Mansour Rahimi

10:00 Examining the Factors Affecting PDA Acceptance among Physicians: An Extended Technology Acceptance Model  
Basak E., Istanbul Technical University, Turkey  
Altin Gumussoy C., Istanbul Technical University, Turkey  
Calisir F., Istanbul Technical University, Turkey

Electromagnetic Interference Power Level Measurements at 2.4 GHz ISM Band: Hospital Environment  
Aki F., Istanbul Commerce University, Turkey  
Yarkan S., Istanbul Commerce University, Turkey  
Zaim A., Istanbul Commerce University, Turkey

10:30 BREAK

Sessions **13** Health Economics  
F-133 Chair: Kirstin Ozturk

**14** Modeling, Simulation, and Optimization  
F-135 Chair: Suzana Brown

11:00 The Loss and Regain of Health. A View from Health Economics for the Support of Public Policies  
Sava D., Independent Consultant, Romania

Simulation Modeling of Hospital Emergency Departments: Review of Literature During Normal and Disaster Times  
Gul M., Yildiz Technical University, Turkey  
Gueri A.F., Yildiz Technical University, Turkey

11:30 Economic Impact of Unplanned School Closures on Student Families in Harrison County School District, Mississippi, November 2012  
Uzun Jacobson E., Centers for Disease Control (CDC), USA  
Adhikari B., Centers for Disease Control (CDC), USA  
Zheteyeva Y., Centers for Disease Control (CDC), USA  
Rainey J., Centers for Disease Control (CDC), USA  
Shi J., Centers for Disease Control (CDC), USA  
Gao H., Centers for Disease Control (CDC), USA  
Johnson J., Centers for Disease Control (CDC), USA  
Bhavnani D., New York City Health Department, USA  
Dobbs T., Mississippi Department of Health, USA  
Uzicanin A., Centers for Disease Control (CDC), USA

A New National Model for Hip Replacement Costs Under Changing Demographics  
Siegl W., Graz University of Technology, Austria  
Lassnig A., Graz University of Technology, Austria  
Herzog A., Graz University of Technology, Austria  
Schrottner J., Graz University of Technology, Austria

12:00 LUNCH BREAK

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