# Tentative Program

**TUESDAY, 5th AUGUST**

14:00 – 16:00 Registration

**WEDNESDAY, 6th AUGUST (morning)**

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
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<tbody>
<tr>
<td>09:00</td>
<td>REGISTRATION</td>
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<tr>
<td>10:15</td>
<td>Welcome address by Fethi CALISIR</td>
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<tr>
<td>10:30</td>
<td><strong>Keynote Speech:</strong> “Data Models for Evaluation and Analysis of Hospital Operations Productivity”, Sanchoy Das, New Jersey Institute of Technology, Newark, USA</td>
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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 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**

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<tr>
<th>Session</th>
<th>IT and Information Systems Management</th>
<th>Healthcare Engineering Education &amp; Training</th>
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<tr>
<td>1</td>
<td>F-133</td>
<td>F-135</td>
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<tr>
<td>Chair</td>
<td>Selim Zaim</td>
<td>Levent Atahan</td>
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<tr>
<th>Time</th>
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<tbody>
<tr>
<td>11:30</td>
<td>A Mobile Asset Tracking System for Healthcare Facilities</td>
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<td></td>
<td>Cevikcan E., Istanbul Technical University, Turkey</td>
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<td>Dumlupinar K., ITECH, Turkey</td>
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<td></td>
<td>Ustundag A., Istanbul Technical University, Turkey</td>
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<td></td>
<td>Small Sized Knapsack Ventilator Bundle: Comparison of Hospitals in Turkey and Implementation Ideas</td>
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<td>Cal M., TUBITAK - TÜSİDE, Turkey</td>
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<td>12:00</td>
<td>LUNCH BREAK</td>
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**WEDNESDAY, 6th AUGUST (afternoon)**

| Sessions | 3 | Modeling, Simulation, and Optimization  
Chair: Emre Cevikcan | 4 | Quality and Process Improvement in Healthcare  
Chair: Alp Ustundag |
|----------|---|----------------------------------------------------------------------------------|---|----------------------------------------------------------------------------------|
| **13:00** | **A Simulation Based Decision Support Tool for Hospital Bed Capacity Planning**  
Sönmez V., Hacettepe University, Turkey  
Dasdemir E., Hacettepe University, Turkey  
Aydin O.M., Hacettepe University, Turkey  
Testik M.C., Hacettepe University, Turkey  
How applicable are University College London Systems Engineering (UCLse) principles in Turkish healthcare system?  
Kaya G.K., University College London, UK  
Urcan E.K., Kingston University London, UK  
Kaya H.T., Necmettin Erbakan University, Turkey  | **13:30** | **A System Dynamics Application to Resource Management in Neonatal Care Services**  
Leboir R., University of Hertfordshire, UK  
Demir E., University of Hertfordshire, UK  
Global Health Systems: An African Case Study  
Gray J., University of Southern California, USA  |
| **14:00** | **Classification of Parkinson’s Disease Using Complex-Valued Neural Networks**  
Peker M., Samandira EML, Turkey  
Sen B., Yildirim Beyazit University, Turkey  
Delen D., Oklahoma State University, USA  
An Evaluation of Servqual and Customer Satisfaction in Health Care Industry  
Zaim S., Istanbul Technical University, Turkey  
Tarim M., Marmara University, Turkey  
Zaim H., Fatih University, Turkey  | **14:30** | BREAK |
| **15:00** | **Relative Importance of Usability and Functionality Factors for Computer-assisted Navigation System for Cryoablation of Kidney Tumors**  
Calisir F., Istanbul Technical University, Turkey  
Basak E., Istanbul Technical University, Turkey  
Barkana D.E., Yeditepe University, Turkey  
A Methodology to Compare Face-to-Face Learning and Distance Learning for Healthcare Tourism Continual Education Program  
Cebeci U., Istanbul Technical University, Turkey  
Dogan O., Istanbul Technical University, Turkey  
Calderone D.V., Istanbul Technical University, Turkey  | **15:30** | **Ergonomic Analysis for Design of Medical Devices: Modeling and Simulation**  
Durgun B., Cukurova University, Turkey  
mHealth Projects in Developed and Resource-Limited Settings  
Brown S., Carnegie Mellon University, USA  
Umutoyi V., Carnegie Mellon University, USA  | **17:00 – 19:00** | **Welcome Reception – Management Faculty Garden**  
Scan QR Code for google maps location  |


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.
## Thursday, 07th August (afternoon)

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<th>Session</th>
<th>Venue</th>
<th>Title</th>
<th>Authors</th>
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<tr>
<td>13:00</td>
<td>F-134</td>
<td>Panel Discussion – “Applying Engineering Concepts to Hospitals”&lt;br&gt;Moderator: Kirstin Ozturk</td>
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<td>14:30</td>
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<td>15:00</td>
<td>F-133</td>
<td>Healthcare Operations Research&lt;br&gt;Chair: Behice Durgun</td>
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<td>15:00</td>
<td>F-135</td>
<td>Engineering and Technology Management in Healthcare&lt;br&gt;Chair: Sencer Ecer</td>
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<td>15:30</td>
<td>Multi Criteria Decision Making Problem for Selection of RTLS Technology for Hospitals&lt;br&gt;Budak A., Istanbul Technical University, Turkey&lt;br&gt;Ustundag A., Istanbul Technical University, Turkey</td>
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<td>15:30</td>
<td>Territory Design for Family Doctors&lt;br&gt;Surer O., Istanbul Technical University, Turkey&lt;br&gt;Yanik S., Istanbul Technical University, Turkey</td>
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<td>15:30</td>
<td>Medical Imaging System Selection Using Fuzzy Axiomatic Design Approach&lt;br&gt;Supciller A.A., Pamukkale University, Turkey&lt;br&gt;Kulak O., Pamukkale University, Turkey</td>
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<td>15:30</td>
<td>Determining the Correct Diagnosis and Appropriate Treatment Method on Keratoconus: a 3D Decision Support Application&lt;br&gt;Kaya H., Ministry of National Education, Turkey&lt;br&gt;Cavusoglu A., TUBITAK, Turkey&lt;br&gt;Çakmak H.B., Yildirim Beyazit University, Turkey&lt;br&gt;Sen B., Yildirim Beyazit University, Turkey&lt;br&gt;Delen D., Oklahoma State University, USA</td>
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<td>16:00</td>
<td>When is it Optimal to Prescribe Antihypertensive Medications? An MDP Analysis&lt;br&gt;Gumus M., McGill University, Canada&lt;br&gt;Zargoush M., McGill University, Canada&lt;br&gt;Verter V., McGill University, Canada&lt;br&gt;Daskalopoulou S., McGill University, Canada</td>
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<td>16:00</td>
<td>Selecting the Best Flux Alternative by Using AHP, ANP, FAHP, and FANP with a Proposed Decision Support Software&lt;br&gt;Ozturk N., Marmara University, Turkey&lt;br&gt;Tozan H., Turkish Naval Academy, Turkey</td>
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<td>17:00</td>
<td>Gala Dinner – Oba Restoran &amp; Sultan Cafe</td>
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FRIDAY, 08th 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

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

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

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
Guneri 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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