Hasan Sinan Bank

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Objective

Research Scientist recently concentrating on advanced robotics systems for digital manufacturing. My areas of expertise include mechanical engineering (robotics, control theory, mechatronics, design, manufacturing), electronics (flexible electronics, sensing, and human electronics interface through touchpads), computer science (human computer interaction via depth cameras, machine learning, navigation, and perception algorithms).
The past experiences in different labs and research environments leverage my interests and advance my interdisciplinary aspects on aforementioned technologies. In short, I strive to design, program, and build systems as a member of a dynamic team who would dare to create a difference and make the world better place.

Education

MSc, Mechanical Aerospace Engineering, Rutgers University, 2012 - 2015
MSc, Mechanical Engineering, Koç University, 2008 - 2011
BSc, Mechanical Engineering, Istanbul Technical University, 2005 - 2010
BSc, Textile Engineering, Istanbul Technical University, 2003 - 2008

Experience

Research Scientist – Automonous Systems Group
(Mar.2016-Present)

- Develop interdisciplinary research in engineering and science which would be translated into products and/or prototypes for clients
- Recognize the gaps in the Siemens' technology products and create innovative ideas for having direct impact related with Business Units
- Define and lead research projects, which may include technical supervision for software engineers, engineers, and interns

Autonomous Agents Researcher – Siemens Corporate Technology
(Sep. 2013- Mar.2016)

- Received a grant for an internal project competition and led the project “Siemens Agile Manufacturing System” -mobile digital manufacturing platform which developed 3D printing stack for Robot Operating System, navigation and odometry packages for the legged-robot, and implemented available perception libraries
- Supported the additive manufacturing add-on for Siemens NX support generation
- Participated in Hackathons which we developed a web interface –named as Spark (Internal Kickstarter Platform) and Siemens Virtual Office (Android-based and immersive VR experience for Siemens PLM Software)

Graduate Researcher Rutgers University (MSc.)
(Aug 2012- Sep. 2013)

- Proposed several innovative ideas which have become on-going research projects, such as soft material morphing air foils, using conductive hydrogels with soft materials sensors, soft material energy harvesting with an aspect of wind belt
- Conducted research on touch interaction of human for interfacing electronics using low-cost and environmentally benign metallized paper
- Proposed a strategy of sensing with single and double electrode on metallized paper with an embedded, real-time detection algorithm
- Used Kinect for a primitive CAD software development with Java (basic hand gesture detections with BLOB and generating vertex, edges and volumes by using these gestures)
- Developed a virtual 3PUU PKM for augmenting complex control algorithms such as robust-adaptive control and linearized feedback control

Graduate/ Teaching Assist. **Koc University (MSc.)** **Manufacturing and Automation Research Center – *Industrial Administration of Turkish Government*** (August 2008 – August 2011)	- Was a teaching assistant for the under-graduates (Dynamics and Computer Aided Design) and the graduates (Mechatronics and Computer Integrated Manufacturing) - Developed a laser workstation (SLS and machining) with a funding from *Ministry of Science, Industry, and Technology of Turkey* [Bank, et.al 2012] - Applied an optimization algorithm to generate multi-criteria toolpaths for machining process [Manav, et.al., 2013] - Designed a 3D Bio-printer for printing poly-caprolactone scaffolds to seed and culture NIH3T3 fibroblast cells [Izbassarov, et.al, 2011]
Publications & Patents	**Bank, H.S.**, Lazoglu, I, "From Conceptual Design to Completion of Automobile Manufacturing Process", Bilim Teknik Dergisi, TUBITAK, January 2010 Manav, C., **Bank, H.S.**, Lazoglu, I., "Toolpath Optimization for Freeform Surfaces", PMI 2010, UBC Izbassarov, D., **Bank, H.S.**, Lazoglu, I., "Mechatronics Design for Manufacturing Bioactive Scaffolds in Tissue Engineering", 2011 **Bank, H.S.,** Lazoglu I., "Development of an Hybrid Laser Workstation for Additive Manufacturing and Laser Machining", 15th International Conference of Machine Design and Production, Denizli, Turkey, 2012 Manav,C., **Bank, H.S.**, Lazoglu, I., "Intelligent Tool Path Selection via Multi-Criteria Optimization in Complex Sculptured Surface Milling", Journal of Intelligent Manufacturing, 2013 **Bank, H.S.**, Dranadula, R., Mazzeo, A.D., A Strategy for Detection of Human with Paper-based Touch Pads, ASME IMECE 2014 – 37550. Arisoy, E., **Bank, H.S.**, Burhop M.R., Musuvathy, S.R., Slavin, E.S. III, Support Structures for Additive Manufacturing of Solid Models, 2014P13000 US01 **Bank, H.S.**, Srivastava, S., Mirabella, Dalloro, L., An Agile Manufacturing System[AMS]: A Framework for Scalable Mobile Robots in Digital Manufacturing, ASME International Design Engineering Technical Conferences, 2016 Zhen S., **Bank, H.S.**, Ren G., Srivastava S., Resilience Metric Calculation for Complex Systems, Resilience Week, Chicago IL, 2016
Media	- Retrieved from Internet: http://www.popsci.com/siemens-created-spider-bots-that-3d-print - Retrieved from Internet: http://www.digitaltrends.com/cool-tech/siemens-robot-spider-3d-printers/#/11
Awards	- Koc University Graduate Fellowship [2008-2011] - Carnegie Graduate Student Fellowship [2011-2012] - TUBITAK -1512- High Resolution Desktop Laser 3D Printer [2015] - Siemens Seedfunding Award, Automation and Control in America Region [2015]
Certificates	- Stanford University, Machine Learning, Sep 2014 - University of Washington, ML Foundations: A case study approach, Jan 2016 - University of Pennsylvania, Robotics: Aerial Robotics, Mar 2016 - University of Pennsylvania, Robotics: Computational Motion Planning, Apr 2016

Skills	- English (Fluent), German (Mittelstuffe), Mandarin (Beginner), Turkish (Native) - Robot Operating System [ROS], C++, Python, Octave/ MATLAB, Java, C, Linux, C/C++ Embedded Programming, SolidWorks, Siemens NX , Labview, Proteus, Eagle, Corel Draw, Theano, GraphLab - Controllers: Spartan 3E FPGA, Microchip PIC Controllers, Arduino Hardware Platform, NI DAQ, NI CRIO, NI PXI Equipments, Labjack - Machine Tools: 3 Axis Micro Machining Tool (AeroTech and DeltaTau Controller), 3 Axis Mazak FJV 200, 5 Axis Mori Seiki NMV 5000
References	Haim Baruh, Professor, Thesis Advisor Rutgers University baruh@jove.rutgers.edu Ismail Lazoglu, Professor, Thesis Advisor Koc University ilazoglu@ku.edu.tr