

# ESER ERDEM TUNA

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## EDUCATION

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**M.S. Electrical and Electronics Engineering**, August 2009 – July 2011 (Expected)

Bilkent University, Ankara, Turkey

Advisor: M. Cenk Çavuşoğlu, Ph.D.

**Visiting Graduate Student**, EECS Department, July 2010 – June 2011

Case Western Reserve University (CWRU), Cleveland, Ohio, USA

Advisor: M. Cenk Çavuşoğlu, Ph.D.

**B.S. Electrical and Electronics Engineering**, May 2009

Bilkent University, Ankara, Turkey

**International Baccalaureate Diploma**, June 2005

TED Ankara College Foundation Private High School, Ankara, Turkey

## RESEARCH INTERESTS

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Systems and Control, Medical Robotics, Mobile Robotics and Computer Vision.

## PROFESSIONAL EXPERIENCE

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2010 – Present **Research Scholar**, Medical Robotics and Computer Integrated Surgery Laboratory  
CWRU, Cleveland, Ohio, USA

- *Robotic-Assisted Beating Heart Surgery Project*

Evaluating the adaptive prediction algorithms using a 3-degree of freedom test-bed system and exploring their behavior in the presence of varying heart rate and arrhythmias in heart motion data.

Involving in the preparation of an experiment set-up for in-vivo validation of heart motion tracking.

Modelling the Sonomicrometric Sensor System by a probabilistic robotics approach.

2009 – Present **Research Assistant**, Department of Electrical and Electronics Engineering  
Bilkent University, Ankara, Turkey

- *Robotic-Assisted Beating Heart Surgery Project*

Developing adaptive and nonlinear prediction algorithms to estimate immediate future of the point of interest in the heart surface over a prediction horizon.

- 2008–2009 **Undergraduate Projects**, Department of Electrical and Electronics Engineering  
Bilkent University, Ankara, Turkey
- *Comparison of Background Subtraction Methods in a Dynamic Scene* (Senior Project I)  
Supervisor: Professor Enis Çetin
  - *An Optical Robot Tracking System* (Senior Project II)  
Supervisor: Professor Hitay Özbay
- Fall 2008 **Part-Time Design Engineer**, YUNEL Elektromekanik Co. Ltd., Ankara, Turkey  
Designed the electronic control panel of company product, Super Shock Air Cannons, by programming PIC microcontrollers
- Summer 2008 **Intern Engineer**, Havelsan EHSIM Inc., Ankara, Turkey  
Developed a part of the software code for the user interface of Automatic Test Device of chaff/flair system used in fighter aircrafts.
- Summer 2007 **Intern Engineer**, Aselsan Inc., Ankara, Turkey  
Designed differential amplifiers for electromagnetic signals to control signal strength and achieve their stabilization in electronic devices.

#### TEACHING EXPERIENCE

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- 2009–2010 **Teaching Assistant**, Bilkent University, Ankara, Turkey
- Microprocessors (Spring 2010)  
Supervised lab sessions, graded assignments and lab reports
  - Analog Electronics (Fall 2009)  
Supervised lab sessions, graded assignments and lab reports

#### PUBLICATIONS

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##### Journal Paper

E. E. Tuna, T. J. Franke, O. Bebek, A. Shiose, K. Fukamachi, and M. C. Cavusoglu, "Heart Motion Prediction Based on Adaptive Estimation Algorithms for Robotic Assisted Beating Heart Surgery." Submitted to IEEE Transaction on Robotics, 2011.

##### Conference Poster

E. E. Tuna and M. C. Cavusoglu, "Adaptive Motion Estimation Algorithm for Robotic Assisted Beating Heart Surgery," IEEE Graduate Research Conference, Bilkent University, Ankara, Turkey, March 2010.

#### HONORS AND AWARDS

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**Full Scholarship for Graduate Study**, Bilkent University (2009-2010)

**Merit Scholarship for Undergraduate Study**, Bilkent University (2008-2009)

## LANGUAGE SKILLS

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- Turkish (native)
- English (fluent)
- German (intermediate)

## COMPUTER SKILLS

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- Languages: C, C++, Java, Assembly, VHDL
- Tools: MATLAB, Simulink, xPC Target, Mathematica, Microsoft Office
- Operating Systems: Microsoft Office, Linux/Unix, Mac OS

## MEMBERSHIPS

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Institute of Electrical and Electronic Engineers (IEEE) Graduate Student Membership

## REFERENCES

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### **Associate Professor M. Cenk Çavuşoğlu**

Electrical Engineering and Computer Science Department

Case Western Reserve University

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### **Professor Hitay Özbay**

Department of Electrical and Electronics Engineering

Bilkent University

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### **Professor Kenneth A. Loparo**

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