

YASEMIN VARDAR

Post Doctoral Researcher at the Max Planck Institute for Intelligent Systems

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RESEARCH INTERESTS

My research focuses on designing haptic devices and applications by considering the capabilities of human haptic perception. My goal is to build intelligent systems that enable delivering users with a wide variety of realistic and controllable haptic experiences.

EDUCATION

Ph.D. in Mechanical Engineering 09/2013 – 01/2018

Koç University, Istanbul, Turkey

Dissertation: Tactile Perception by Electro-vibration

Advisors: Prof. Dr. Cagatay Basdogan and Prof. Dr. Burak Güçlü

M.Sc. in Systems and Control 09/2010 – 08/2012

Eindhoven University of Technology, Eindhoven, The Netherlands

Dissertation: Estimation of MIMO Closed-loop Poles using Transfer Function Data

Advisor: Prof. Dr. Marteen Steinbuch and Dr. Niels van Dijk

B.Sc. (Exchange Student) in Electrical Engineering 01/2009 – 05/2009

University of Surrey, Guildford, United Kingdom

B.Sc. in Mechatronics Engineering 09/2005 – 07/2010

Sabancı University, Istanbul, Turkey

Graduation Project: Design and Control of 6 DOF Robotic Arm for Pick and Place Applications

Advisor: Prof. Dr. Kemalettin Erbatur

POSITIONS HELD

Post Doctoral Researcher 02/2018 – Current

Haptic Intelligence Department

Max Planck Institute for Intelligent Systems, Stuttgart, Germany

Advisor: Dr. Katherine J. Kuchenbecker

Consultant 05/2019 – Current

Tactai, Inc.

Research and Teaching Assistant 09/2013 – 01/2018

Koç University, Istanbul, Turkey

Control Engineer 10/2012 – 08/2013

TNO, Eindhoven, The Netherlands

Research Intern 12/2011 – 08/2012

Philips Innovation Technologies, Eindhoven, The Netherlands

Research Intern 09/2012 – 12/2012

ASML, Veldhoven, The Netherlands

AWARDS AND HONORS

Eurohaptics Society Best Ph.D. Thesis Award	2018
Sign Up! Career Building Program for Excellent Postdocs in the Max Planck Society	2018
Best Poster Presentation Award, IEEE World Haptics Conference (with co-authors)	2018
Ph.D. Scholarship, Koç University	2013 – 2018
Ph.D. Scholarship, The Scientific and Technological Research Council of Turkey	2013 – 2017
Travel Grant, Koç University	2015 – 2017
Travel Grant, The Scientific and Technological Research Council of Turkey	2016
M.Sc. Scholarship, Eindhoven University of Technology	2010 – 2012
M.Sc. Scholarship, The Scientific and Technological Research Council of Turkey (waived)	2010 – 2012
B.Sc. Prime Minister Scholarship, Turkish Prime Minister Foundation	2005 – 2010
Erasmus Scholarship, Socrates Program	2009
B.Sc. Honor Scholarship, Sabancı University	2005 – 2010
Graduation with honors, Sabancı University	2012

PUBLICATIONS

Journal Papers

- [J1]. Saekwang Nam, **Yasemin Vardar**, David Gueorguiev, and Katherine J. Kuchenbecker. Physical Variables Underlying Tactile Stickiness During Fingerpad Detachment. *Frontiers in Neuroscience*, 2020, Accepted
- [J2]. Aykut İşleyen, **Yasemin Vardar**, and Cagatay Basdogan. Tactile Roughness Perception of Virtual Gratings by Electro vibration. *IEEE Transactions on Haptics*, 2019
- [J3]. **Yasemin Vardar**, Burak Güçlü, and Cagatay Basdogan. Tactile Masking by Electro vibration, *IEEE Transactions on Haptics*, 11(4):623–635, 2018
- [J4]. **Yasemin Vardar**, Burak Güçlü, and Cagatay Basdogan. Effect of Waveform on Tactile Perception of Electro vibration Displayed on Touchscreens, *IEEE Transactions on Haptics*, 10(4):488–499, 2017

Peer-Reviewed Conference Papers (min. 6 pages)

- [C1]. **Yasemin Vardar**, Christian Wallraven, and Katherine J. Kuchenbecker. Fingertip interaction metrics correlate with visual and haptic perception of real surfaces. *In Proceedings of the IEEE World Haptics Conference (WHC)*, pages: 395-400, Tokyo, Japan, July 2019
- [C2]. Milad Jamalzadeh, Burak Güçlü, **Yasemin Vardar**, and Cagatay Basdogan. Effect of remote masking on detection of electro vibration. *In Proceedings of the IEEE World Haptics Conference (WHC)*, pages: 229-234, Tokyo, Japan, July 2019
- [C3]. Tamara Fiedler and **Yasemin Vardar**. A novel texture rendering approach for electrostatic displays. *In Proceedings of the International Workshop on Haptics and Audio Interaction Design (HAID)*, Lille, France, March 2019
- [C4]. **Yasemin Vardar**, Aykut İşleyen, Khurram M. Saleem, and Cagatay Basdogan. Roughness perception of virtual textures generated via electro vibration on touchscreens. *In Proceedings of the IEEE World Haptics Conference (WHC)*, pages: 263-268, Munich, June 2017
- [C5]. **Yasemin Vardar**, Burak Güçlü, and Cagatay Basdogan. Effect of waveform in haptic perception by electro vibration on touchscreens. *In Haptics: Perception, Devices, Control and Applications: 10th International Conference Eurohaptics 2016*, London, UK, July 4-7, Proceedings, Part I, 10(4):190-203, 2016
- [C6]. Marceel F. Heertjes and **Yasemin Vardar**. Sliding mode control of high precision systems. *In IFAC Proceedings Volumes*, 46(5):13-19, 2013

Hands-on Demonstrations

- [D1]. **Yasemin Vardar** and Katherine J. Kuchenbecker. Do finger touch gestures affect how electrovibration feels? Accepted for hands-on demonstration at *IEEE Haptics Symposium 2020*
- [D2]. Tamara Fiedler, **Yasemin Vardar**, Matti Strese, Eckehard Steinbach, and Cagatay Basdogan. Reproduction of textures based on electrovibration: a frequency domain approach. *Hands-on demonstration presented in the IEEE World Haptics Conference, 2017*
- [D3]. Senem Ezgi Emgin, Bushra Sadia, **Yasemin Vardar**, and Cagatay Basdogan. Enhancing human-computer interaction via electrovibration. *Hands-on demonstration presented in the IEEE World Haptics Conference, 2017*

Abstracts

- [A1]. **Yasemin Vardar**, Christian Wallraven, and Katherine J. Kuchenbecker. Fingertip interaction metrics correlate with visual and haptic perception of real surfaces. *Abstract at the DyVito Bilkent Cappadocia Workshop, November 2019*
- [A2]. **Yasemin Vardar**, Christian Wallraven, and Katherine J. Kuchenbecker. Fingertip interaction metrics correlate with visual and haptic perception of real surfaces. *Abstract at the Workshop Materials and Haptics, February 2019*
- [A3]. **Yasemin Vardar**, Burak Güçlü, and Cagatay Basdogan. Tactile Masking by Electro vibration. *Extended abstract at the 2018 CSF Hand, Brain, and Technology Conference (HBT), August 2018*

GRANTS

MPI Grassroots 2020 Project Funding	01/2020 – 01/2021
Development of a Surface Haptic Display using Liquid Crystal Elastomers for Softness Sensation Rendering	
Role: PI at Haptic Intelligence Department	
PI's at Physical Intelligence Department: Hamed Shahsavan and Amirreza Aghakhani	
Grant Amount: 24000 Euro	

MENTORING

Mentored Students at the Haptic Intelligence Department of the MPI-IS

Mojan Izadkhah (intern at B.Sc. level)	07/2020 – 09/2020
Luzia Knoedler (part time working student at M.Sc. level)	10/2019 – 01/2020
Shao Wen Wu (part time working student at M.Sc. level)	02/2019 – 08/2019
Elisa Loffler (intern at high-school level)	11/2018 – 02/2019

Mentored Students at the Robotics and Mechatronics Laboratory of the Koç University

Milad Jamalzadeh (M.Sc. student)	09/2017 – 04/2019
Aykut İşleyen (M.Sc. student)	09/2016 – 01/2019
Tamara Fiedler (intern at M.Sc. level)	06/2016 – 08/2016
Batuhan Ozer (B.Sc. student)	01/2015 – 06/2015
Batu Berke Ozdemir (B.Sc. student)	01/2015 – 06/2015
Nihat Iskender (B.Sc. student)	01/2015 – 06/2015

INSTRUCTION AND COURSE DEVELOPMENT

Introduction to Matlab Programming

03/2020

The course is intended for programming beginners and will therefore cover basic topics. The course will introduce elements common to programming languages (e.g. variables and operators, data types, control flow, file input/output) and point to techniques and concepts specific to Matlab. These include scalar expansion, logical subscripting, reshaping and other high-level manipulation of arrays, high-level graphics commands, scripts vs. functions, speed and memory issues, graphical user interfaces.

University of Tübingen, Germany; co-lecture with Dr. Hasti Seifi

Others

09/2013 – 01/2018

I worked as a teaching assistant of the courses Mechanical Engineering Design (Fall 2013 – 2015, 2017), Dynamic Modelling and Control (Spring 2014 – 2017), and Natural Sciences (Fall 2016).

Koç University

PROFESSIONAL SERVICES

Institutional Services

Member of the Demo Team, Haptic Intelligence Department, MPI-IS 2018 – Current

Human Subjects Coordinator, Haptic Intelligence Department, MPI-IS 2019

Member of the IT Community, MPI-IS 2018

Organizational Help

Program Committee Member of IEEE Haptics Symposium, 2020 – 2022

Session chair, IMPRS-IS Symposium, 2019

Designer of sponsorship page and proceedings cover pages, IEEE Haptics Symposium 2018

Volunteer for organizing Athena Meet and Greet Event for International Women in Science Day, 2018

Student volunteer, IEEE World Haptics Conference, 2017

Reviews

Journal Paper Reviews

IEEE Transactions on Mechatronics, IEEE Transactions on Haptics, The Computer Journal, International Journal of Automation and Computing, International Journal of Human-Computer Interaction, Robotics and Automation Letters, International Journal of Human-Computer Studies, Applied Perception, Neuroscience Letters, Scientific Reports

Conference Paper Reviews

Eurohaptics 2018-2020, IEEE World Haptics 2017-2019, TORC 2017, ICRA 2019, IROS 2019, IEEE Haptics Symposium 2018-2020, HRI 2019

PRESENTATIONS

Invited Seminars

The Journey Towards Realistic Haptic Displays, University of California Irvine, Irvine, April, 2020

The Journey Towards Realistic Haptic Displays, Carnegie Mellon University, The Robotics Institute, Pittsburgh, February, 2020

The Journey Towards Realistic Haptic Displays, Delft University of Technology, Delft, The Netherlands, February, 2020

The Journey Towards Realistic Haptic Displays, Texas A&M University, College Station, USA, January, 2020

The Journey Towards Realistic Haptic Displays, University of Wisconsin-Madison, Madison, USA, December, 2019

The Journey Towards Realistic Haptic Displays, Washington State University, Pullman, USA, December, 2019

Tactile Perception of Electro-vibration Displayed on Touchscreens, Max Planck Institute for Cognitive and Brain Sciences, Leipzig, Germany, November, 2019

Tactile Perception by Electro-vibration, Eurohaptics Society Best Ph.D. Thesis Award talk, IEEE World Haptics Conference, Tokyo, Japan, July, 2019

Generation of haptic feedback on touchscreens via electro-vibration, Facebook Reality Labs, Seattle, USA, June, 2019

Fingertip interaction metrics correlate with visual and haptic perception of real surfaces, Material Science and Haptics Workshop, Saarbrücken, Germany, February, 2019

Understanding the physics behind electro-adhesion, University of Tübingen, Tübingen, Germany, 2018

Effect of waveform on tactile perception of electro-vibration displayed on touchscreens, Max Planck Institute for Intelligent Systems, Stuttgart, Germany, July, 2017

Educational Talks and Workshops

Career Building Strategies for Postdocs and Ph.D. Students, Max Planck Institute for Intelligent Systems, Stuttgart, Germany, 2019

Tactile perception by electro-vibration, Workshop Presentation at the IEEE World Haptics Conference 2017, Munich, Germany, June, 2017

Technical Paper Presentations

Fingertip interaction metrics correlate with visual and haptic perception of real surfaces, MPI-IS Retreat, 2019

Fingertip interaction metrics correlate with visual and haptic perception of real surfaces, IEEE World Haptics Conference 2019, Tokyo, Japan, July, 2019

Effect of remote masking on detection of electro-vibration, IEEE World Haptics Conference 2019, Tokyo, Japan, July, 2019

A novel texture rendering approach for electrostatic displays, International Workshop on Haptics and Audio Interaction Design 2019, Lille, France, March, 2019

Effect of waveform in haptic perception of electro-vibration, IEEE World Haptics Conference 2016, London, UK, June, 2016

Poster Presentations

Fingertip interaction metrics correlate with visual and haptic perception of real surfaces, DyVito Workshop, Cappadocia, Turkey, November, 2019

Tactile masking by electro-vibration, IEEE World Haptics Conference 2019, Tokyo, Japan, July, 2019

Visual and Haptic Perception of Real Surfaces, MPI-IS Scientific Advisory Board Poster Presentation, 2019, Tübingen, Germany

Technical paper presentation, Tactile masking by electro-vibration, Hand Brain and Technology Conference 2018, Ascona, Switzerland

Effect of waveform on tactile perception of electro-vibration displayed on touchscreens, Haptics Symposium 2018, San Francisco, USA

Roughness perception of virtual textures displayed by electrovibration on touchscreens, IEEE World Haptics Conference 2017, Munich, Germany

SCIENTIFIC AND PROFESSIONAL SOCIETIES

Institute for Electrical and Electronic Engineers (IEEE), Robotics and Automation Society

Eurohaptics Society

ATHENA, Society of Female Scientists at Planck Institute for Intelligent Systems

Society of Women Engineers at Koç University

OUTREACH

Panel discussion, *Career paths for mechatronics engineers*, Fethiye Science High School, Mugla, Turkey, March, 2020

Panel discussion, *Career paths for mechatronics engineers*, Mehmet Erdogan Anatolian High School, Mugla, Turkey, 2012

Civic Involvement Project, Sabanci University, 2005

MEDIA HIGHLIGHTS

Press release documented by Linda Behringer: Yasemin Vardar wins the Eurohaptics Society Best Ph.D. Award 2018, July 2019

Press release documented by Hande Sarantopoulos: Yasemin Vardar received the Eurohaptics Society Best Ph.D. Award 2018, July 2019