Ayse Kucukyilmaz, Ph.D.

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Qualifications

2008 – 2013	**Ph.D. in Computational Sciences and Engineering, Koc University, Turkey** *Thesis: Haptic Role Allocation and Intention Negotiation in Human-Robot Collaboration Distinction.* Academic Excellence Award, College of Engineering
2004 – 2007	**M.Sc. in Computer Engineering, Bilkent University, Turkey** *Thesis: Computer Modeling and Animation of Brittle Fracture in Three Dimensions.*
2000 – 2004	**B.Sc. in Computer Engineering, Bilkent University, Turkey** *First class honours.*

Employment

01/20- — **Assistant Professor.** University of Nottingham, School of Computer Science, Nottingham, UK.
- Member of Mixed Reality Lab (MRL)

10/17-01-20 — **Senior Lecturer.** University of Lincoln, School of Computer Science, Lincoln, UK.
- Member of Lincoln Centre of Autonomous Systems (L-CAS)
- Member of Athena SWAN Charter in the School of Computer Science

10/15-08/17 — **Assistant Professor.** Yeditepe University, Department of Computer Engineering, Istanbul, Turkey.
- Co-director of Yeditepe University Robotics and Intelligent Systems Group
- Directed research projects – funded by EC Marie Curie Actions and TUBITAK (Scientific and Technological Research Council of Turkey)

09/13-09/15 — **Postdoctoral Research Fellow.** Personal Robotics Laboratory, Imperial College, London, UK.
- Worked as a researcher in the EU FP7 project ALIZ-E, which aimed at enabling long-term interaction between intelligent companion robots and hospitalized children with diabetes
- Held research felloship from TUBITAK (Scientific and Technological Research Council of Turkey) between 2014-2015
- Designed a new machine learning framework, "learning assistance by demonstration" (LABD) for assistive shared control systems on wheelchairs. Developed software to implement LABD on an intelligent wheelchair system developed at Imperial College London. Conducted experimental studies and statistical analyses for the evaluation of proposed methodologies. Performed hospital and care centre visits for initiating long-term interaction studies with patients.

09/08–06/13   **Research Assistant.** Robotics and Mechatronics Laboratory, Koc University, Istanbul, Turkey.
- Designed a novel haptic shared control framework, "haptic negotiation" that can distinguish between task, human and assistive forces. Managed the research and development on force based role exchange mechanisms and intention recognition for collaborative joint object manipulation in human robot teams under simulated and physical settings. Designed and conducted experimental protocols for user studies and analysed the data.
- Supervised the thesis work of two master's students, who have successfully finished their studies.
- Prepared course material and participated as a teaching assistant in graduate and postgraduate level courses, mentored students in classroom, assessed coursework and term projects.

05/11–08/11   **Visiting Researcher.** CoteSys Research Center, Technische Universität München, Munich, Germany.
- Initiated joint research between Koc University and TUM
- Planned the implementation of a force-based role exchange mechanism in a collaborative joint object transportation scenario between a human and a human-sized mobile robot
- Implemented software that realizes the role exchange behaviour
- Designed and conducted the experimental protocol

07/07–05/08   **Junior Engineer.** ParanaVision Co., Ankara, Turkey.
- Developed computer vision algorithms for a security tool project that detects suspicious behaviour from real time video camera recordings
- Acted as the primary investigator of the project in all stages of the project life cycle

09/04–09/08   **IT Specialist.** Bilkent University, Ankara, Turkey.
- Developed and administered the web services for EU FP6 Network of Excellence Project 3DTV - Integrated 3-D Television: Capture, Transmission, and Display

09/04–05/07   **Research Assistant.** Bilkent University, Ankara, Turkey.
- Conducted research on the development of 3D object models for brittle fracture
- Prepared laboratory sessions for undergraduate students and mentored students in a one-to-one basis or in small groups as a teaching assistant
- Organized tutorials on software testing

Grants

Source:	UKRI Healthcare Technologies New Challenges NetworkPlus
Title:	Next Generation Rehabilitation Technologies (EP/W000679/1)
Role:	Co-Investigator
Duration:	2021–2024
Budget:	£1M

Source:	UKRI Trustworthy Autonomous Systems Hub Pump Priming Programme
Title:	TARICS: Trustworthy Accessible Robots for Inclusive Cultural experiences

Grants (continued)

Role:	Co-Investigator
Duration:	2022–2023
Budget:	£150.000

Source:	UKRI Trustworthy Autonomous Systems Hub Integrator Programme
Title:	TAS-ART: Augmented Robotic Telepresence Integrator
Role:	Principal Investigator
Duration:	2022–2023
Budget:	£51.684

Source:	HORIZON Trusted Data-Driven Products Agile Projects Programme Round 2
Title:	Open all Senses – Accessible Multimodal Telepresence Robots in Social Spaces
Role:	Co-Investigator
Duration:	2022–2023
Budget:	£57.000

Source:	UKRI Trustworthy Autonomous Systems Hub Agile Programme
Title:	Trustworthy Human–Robot Teams
Role:	Co-Investigator
Duration:	2021–2022
Budget:	£100.000

Source:	UKRI Horizon Digital Economy Research Agile Projects Programme Round 1
Title:	Robots Mediating Interaction: Understanding Interaction and Perception in Collaborative Work via Cobots
Role:	Co-Investigator
Duration:	2021–2022
Budget:	£50.000

Source:	ERA-Net CHIST-ERA
Title:	HEAP: Human-Guided Learning and Benchmarking of Robotic Heap Sorting (EP/S033718/1)
Role:	Co-Investigator
Duration:	2019–2023
Budget:	€1.3M

Source:	EPSCR NCNR Flexible Partnership Fund
Title:	CoRSA: Co-manipulated Training and Skill Assistance for Telemanipulation in Nuclear Settings
Role:	Principal Investigator
Duration:	2019–2021
Budget:	£100.000

Source:	European Union European Regional Development Fund

Grants (continued)

Title:	UR10 Integration for Polyurethane Moulding Process
Role:	Principal Investigator
Duration:	03/2019-06/2019
Budget:	€1500

Source:	TUBITAK 1003 Program, Turkey
Title:	Development of a Flexible Sensor Suit for a Lower Body Exoskeleton
Role:	Consultant (I was the original coordinator of the proposal, however the project is transferred to another PI due to my move to the UK before the contract was signed.
Duration:	2019-2022
Budget:	£300.000

Source:	EC-FP7 Marie Curie Actions-People Brain Circulation Scheme (Co-Circulation)
Title:	Online Recognition of Interaction Behaviors in Dyadic Collaboration
Role:	Principal Investigator
Duration:	2015-2016
Budget:	€300.000

Source:	Scientific and Technological Research Council of Turkey (TUBITAK) 2219- International Postdoctoral Scholarship Programme
Title:	Learning Assistance by Demonstration in Triadic Interaction for Intelligent Wheelchair Systems
Role:	Principal Investigator
Duration:	2014-2015
Budget:	€22.800

Research Project Experience

Source:	EC-FP7
Title:	ALIZ-E: Adaptive Strategies for Sustainable Long-Term Social Interaction
Role:	Researcher (Research Associate)
Duration:	2010-2014 (participated in the project from 2013 to 2014)
Budget:	€8.3M

Source:	EC-FP6
Title:	3DTV: Integrated 3-D Television: Capture, Transmission, and Display
Role:	Researcher (Research Assistant)
Duration:	2004-2008
Budget:	€6M

Honors and Awards

2021   **Recognition of your significant contribution to EPSRC Peer Review** Achieved a ranking in the top 6% of College members for participating in peer review activities during the academic year 2019/20

2017	**Meritorious Service Award**
	IEEE Computer Society
	Presented as one of the three meritorious service awards for work as a reviewer for IEEE Transactions on Haptics in 2016
2015	**Candidate for RSJ/KROS Distinguished Interdisciplinary Research Award**
	IEEE RO-MAN 2015, Kobe, Japan
2014	**Recognition for Excellence in Reviewing**
	ACM International Conference on Multimodal Interaction
2013	**2nd rank in department**
	College of Engineering, Koc University, Istanbul, Turkey
	Academic Excellence Award
	College of Engineering, Koc University, Istanbul, Turkey
2011	**Best Previously Published Research Paper Award**
	Computer Science Student Workshop, Istanbul, Turkey
2010	**International Scientific Events Travel Funding Program**
	Scientific and Technological Research Council of Turkey, Ankara, Turkey
	Best Poster Award
	Computer Science Student Workshop, Istanbul, Turkey
2008-2013	**Full Scholarship during doctoral studies**
	Koc University, Vehbi Koc Vakfi, Istanbul, Turkey
2004-2007	**Full Scholarship during graduate studies**
	Bilkent University, Ankara, Turkey
2001-2004	**Dean's List**
	Bilkent University, Ankara, Turkey
2000-2004	**Full Scholarship during undergraduate studies**
	Bilkent University, Ankara, Turkey
2000	**Central university entrance exam: ranked within top 500 over 1.5 million examinees**
	OSYM, Ankara, Turkey

Professional Service

- Independent Evaluator
    - European Commission H2020-ICT (2017 –)
    - EPSRC Associate Peer Review College (2019 –)
    - TUBITAK, Turkey – call 1003-BIT-ROME-2017-1 "Research Grants in Priority Areas - Human Machine Interaction" (2017)
    - British Council Newton Fund
    - UK National Commission for UNESCO Newton Prize (2019)
- Editorial board, FITEE (Frontiers of Information Technology and Electronic Engineering)
- Associate Editor
    - Eurohaptics Conference
    - IEEE International Symposium on Robot and Human Interactive Communication (RO-MAN)
- Awards chair for International Conference on Human–Agent Interaction (HAI), 2016
- Workshop chair for Turkish Robotics Conference (ToRK), 2016

- Co-organizer for the Human-Robot Interaction Workshop held in conjunction with Turkish Robotics Conference (ToRK) 2013
- Co-organizer for the Physical Human-Robot Collaboration and Haptic Shared Control Workshop held in conjunction with IEEE World Haptics Conference 2013
- Advisory board member for International Conference on Recent Advances in Robotics and Mechatronics (RARM)
- Workshop chair for the 3rd and 4th Computer Science Student Workshop (CSW'13, CSW'12), Istanbul, Turkey
- Logistics chair for the second Computer Science Student Workshop (CSW'11), Istanbul, Turkey
- Reviewer for:
  - IEEE Transactions on Haptics
  - IEEE Transactions on Human-Machine Systems
  - IEEE Transactions on Robotics
  - IEEE Robotics and Automation Letters
  - Elsevier Robotics and Autonomous Systems
  - Springer Autonomous Robots
  - International Journal of Human-Computer Studies
  - Robotica
  - Elsevier Computers & Graphics Journal

Memberships

- European Network for the Advancement of Artificial Cognitive Systems, Interaction, and Robotics (EuCog)
- Institute of Electrical and Electronics Engineers (IEEE)
- IEEE Robotics and Automation Society (IEEE-RAS)
- IEEE Technical Committee on Haptics
- UCTEA Chamber of Computer Engineers of Turkey (BMO)

Publications

Fatehi, K., Torres Torres, M., & **Kucukyilmaz**, **A.** (2022). Scoutwav: two-step fine-tuning on self-supervised automatic speech recognition for low-resource environments. In *Interspeech 2022*.

Serhan, B., Pandya, H., **Kucukyilmaz**, **A.**, & Neumann, G. (2022). Push-to-see: learning non-prehensile manipulation to enhance instance segmentation via deep q-learning. In *IEEE international conference on robotics and automation (ICRA 2022)*.

Laparidou, D., Curtis, F., Akanuwe, J., Goher, K., Niroshan Siriwardena, A., & **Kucukyilmaz**, **A.** (2021). Patient, carer, and staff perceptions of robotics in motor rehabilitation: a systematic review and qualitative meta-synthesis. *Journal of Neuroengineering and Rehabilitation*, *18*(1), 1–24.

Ly, K. T., Poozhiyil, M., Pandya, H., Neumann, G., & **Kucukyilmaz**, **A.** (2021). Intent-aware predictive haptic guidance and its application to shared control teleoperation. In *2021 30th ieee international conference on robot & human interactive communication (ro-man)* (pp. 565–572). IEEE.

Issak, I. & **Kucukyilmaz**, **A.** (2020). The goods and bads in dyadic co-manipulation: identifying conflict-driven interaction behaviours in human-human collaboration. In *UKRAS20 Conference: "robots into the real world"* (pp. 37–39). doi:`10.31256/Fv3Gn1L`

Al-Saadi, Z., Sirintuna, D., **Kucukyilmaz**, **A.**, & Basdogan, C. (2020). A novel haptic feature set for the classification of interactive motor behaviors in collaborative object transfer. *IEEE Transactions on Haptics*.

Singh, J., Srinivasan, A. R., Neumann, G., & **Kucukyilmaz**, **A.** (2020). Haptic-guided teleoperation of a 7-dof collaborative robot arm with an identical twin master. *IEEE Transactions on Haptics*, *13*(1), 246–252.

Ugur, E., Samur, E., Ugurlu, B., Erol Barkana, D., Kucukyilmaz, A., & Bebek, O. (2020). Intelligent control of exoskeletons through a novel learning-from-demonstration method. In *Cybathlon symposium 2020*.

Kucukyilmaz, **A.** & Issak, I. (2019). Online identification of interaction behaviors from haptic data during collaborative object transfer. *IEEE Robotics and Automation Letters*, *5*(1), 96–102.

Sari, S. & **Kucukyilmaz**, **A.** (2019). VR-Fit: walking-in-place locomotion with real time step detection for vr-enabled exercise. In *International conference on mobile web and intelligent information (MobiWis)*. Springer.

Ugurlu, B., Acer, M., Barkana, D. E., Gocek, I., **Kucukyilmaz**, **A.**, Arslan, Y. Z., … Bebek, O. (2019). A soft+rigid hybrid exoskeleton concept in scissors-pendulum mode: a suit for human state sensing and an exoskeleton for assistance. In *2019 IEEE international conference on rehabilitation robotics (ICORR)*. IEEE.

Del Duchetto, F., **Kucukyilmaz**, **A.**, Iocchi, L., & Hanheide, M. (2018). Do not make the same mistakes again and again: learning local recovery policies for navigation from human demonstrations. *IEEE Robotics and Automation Letters (The contents of this paper were also selected by IROS'18 Program Committee for presentation at the Conference)*, *3*(4), 4084–4091. doi:10.1109/LRA.2018.2861080

Kucukyilmaz, **A.** & Demiris, Y. (2018). Learning shared control by demonstration for personalized wheelchair assistance. *IEEE Transactions on Haptics*, *PP*(99), 1–1. doi:10.1109/TOH.2018.2804911

Kucukyilmaz, **A.** & Demiris, Y. (2015). One-shot assistance estimation from expert demonstrations for a shared control wheelchair system. In *2015 24th IEEE international symposium on robot and human interactive communication (RO-MAN)*. IEEE. doi:10.1109/roman.2015.7333600

Madan, C. E., **Kucukyilmaz**, **A.**, Sezgin, T. M., & Basdogan, C. (2015). Recognition of haptic interaction patterns in dyadic joint object manipulation. *IEEE Transactions on Haptics*, *8*(1), 54–66. doi:10.1109/toh.2014.2384049

Kucukyilmaz, **A.**, Sezgin, T. M., & Basdogan, C. (2013a). Intention recognition for dynamic role exchange in haptic collaboration. *IEEE Transactions on Haptics*, *6*(1), 58–68. doi:10.1109/toh.2012.21

Kucukyilmaz, **A.**, Sezgin, T. M., & Basdogan, C. (2013b). Role allocation through haptics in physical human-robot interaction. In *2013 21st signal processing and communications applications conference (SIU)*. IEEE. doi:10.1109/siu.2013.6531558

Kucukyilmaz, **A.**, Oguz, S. O., Sezgin, T. M., & Basdogan, C. (2012). Improving human-computer cooperation through haptic role exchange and negotiation. In *Springer series on touch and haptic systems* (pp. 229–254). Springer London. doi:10.1007/978-1-4471-2754-3_13

Mörtl, A., Lawitzky, M., **Kucukyilmaz**, **A.**, Sezgin, M., Basdogan, C., & Hirche, S. (2012). The role of roles: physical cooperation between humans and robots. *The International Journal of Robotics Research*, *31*(13), 1656–1674. doi:10.1177/0278364912455366

Oguz, S. O., **Kucukyilmaz**, **A.**, Sezgin, T. M., & Basdogan, C. (2012). Supporting negotiation behavior with haptics-enabled human-computer interfaces. *IEEE Transactions on Haptics*, *5*(3), 274–284. doi:10.1109/toh.2012.37

Kucukyilmaz, **A.**, Sezgin, T. M., & Basdogan, C. (2011). Conveying intentions through haptics in human-computer collaboration. In *2011 IEEE world haptics conference*. IEEE. doi:10.1109/whc.2011.5945523

Oguz, S. O., **Kucukyilmaz**, **A.**, Sezgin, T. M., & Basdogan, C. (2010). Haptic negotiation and role

exchange for collaboration in virtual environments. In *2010 IEEE haptics symposium*. IEEE. doi:`10.1109/haptic.2010.5444628`

Kucukyilmaz, A. & Ozguc, B. (2005). An animation system for fracturing of rigid objects. In *Computer and information sciences – ISCIS 2005* (pp. 688–697). Springer Berlin Heidelberg. doi:`10.1007/11569596_71`

References

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