

FETHIYE IRMAK DOĞAN

Ph.D. Candidate, KTH Royal Institute of Technology
Division of Robotics, Perception and Learning
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OBJECTIVE	Endowing robots with the ability to learn new concepts and understand scene semantics for effective human-robot collaboration
AREAS OF INTEREST	Human-Robot Interaction, Machine Learning, Deep Learning, Artificial Intelligence, Computer Vision
EDUCATION	<p><i>Ph.D. candidate, Division of Robotics, Perception, and Learning, KTH Royal Institute of Technology</i> 01.2018-present</p> <p><i>M.Sc., Computer Engineering, Middle East Technical University</i> 09.2015-12.2017 – Graduated with High Honor degree - CGPA : 3.93/4.00</p> <p><i>B.Sc., Computer Engineering, Middle East Technical University</i> 09.2010-06.2015 – Graduated with Honor degree - CGPA : 3.40/4.00</p> <p><i>High School, 60. Yıl Anatolian High School</i> 09.2006-06.2010 – Graduated - CGPA : 91.56/100 – In the top 0.2% out of 2 million applicants entering the nation-wide university entrance exam</p>
WORK EXPERIENCE AND PROJECTS	<p><i>Ph.D. candidate at the Division of Robotics, Perception and Learning, KTH Royal Institute of Technology, SWEDEN</i> 01.2018-present – Working on generation and comprehension of referring expressions (i.e., the expressions describing objects with their distinguishing features) to understand natural language instructions and resolve ambiguities for an effective human-robot interaction, supervised by Iolanda Leite</p> <p><i>Visiting scholar at the Robot Autonomy and Interactive Learning (RAIL) Lab, Georgia Institute of Technology, USA</i> 11.2021-04.2022 – Developing a transformer-based technique for semantic-driven object location disambiguation in Human-Robot Conversation, supervised by Sonia Chernova</p> <p><i>Participating in Oxford Machine Learning Summer School 2021</i> 07.2021-08.2021 – Selected to participate in the highly selective summer school (~ 15% acceptance rate) among many qualified applicants from 118 countries for best-in-class training on machine learning and deep learning</p> <p><i>Participating in Amazon Alexa Prize, Fantom Social Bot</i> 02.2018-08.2018 – Selected as one of 8 teams among the applicants from leading 195 universities to create a social bot that converses coherently and engagingly with humans on popular topics, supervised by Gabriel Skantze</p> <p><i>Researcher at KOVAN Robotics Research Lab, Department of Computer Engineering, Middle East Technical University, TURKEY</i> 09.2015-12.2017 – Incremental context modeling for robots to be capable of adapting to challenging real-world environments, supervised by Sinan Kalkan – A side project to determine the health status of patients in a fuzzy manner using verbal interaction and sensory data</p> <p><i>Senior Design Project at Department of Computer Engineering, Middle East Technical University, TURKEY</i> 09.2014-06.2015 – 3D animation of fMRI data to visualize the cognitive processes in the brain and generating some filters to make the data interpretable for neuroscientists, supervised by Fatos Tunay Yarman Vural</p>

Internship at The Maersk Mc-Kinney Moller Institute, University of Southern Denmark, DENMARK 06.2014-09.2014

- A plugin providing a graphical user interface for automated calibration of UR robot arms, supervised by Norbert Krueger

Internship at KOVAN Robotics Research Lab, Department of Computer Engineering, Middle East Technical University, TURKEY 06.2013-09.2013

- Visualizing the 2D and 3D representations of the iCub robot's vision and programming Nao to perform a traditional dance, supervised by Sinan Kalkan

Part time software developer at Özgür Yazılım Company, TURKEY 02.2013-06.2013

- Taking a role in the development of Tekir Accounting Program

TEACHING

Teaching Assistant at KTH Royal Institute of Technology, SWEDEN 01.2019-present

- Master level machine learning course

Teaching Assistant at Department of Computer Engineering, Middle East Technical University, TURKEY 02.2014-06.2014

- C programming language course

MENTORING

KTH Royal Institute of Technology, SWEDEN 01.2019-present

- Master Students: Shipra Jain, Jiaming Huang, and Amrita Panesar
- Research Engineers: Shreya Kohli, and Rasmus Rudling
- High School Intern: Erik Eriksson

Georgia Institute of Technology, USA 11.2021-04.2022

- Master Student: Aswin Gururaj Prakash

SCIENTIFIC CONTRIBUTIONS

Journal Articles:

- **F. I. Doğan**, G. I. Melsión, and I. Leite, 'Leveraging Explainability for Understanding Object Descriptions in Ambiguous 3D Environments,' *Frontiers in Robotics and AI*, (Under review).
- **F. I. Doğan**, S. Gillet, E. J. Carter, and I. Leite, 'The Impact of Adding Perspective-Taking to Spatial Referencing during Human-Robot Interaction,' *Robotics and Autonomous Systems (RAS)*, 2020.

Refereed Conference Publications:

- **F. I. Doğan**, W. Liu, I. Leite, and S. Chernova, 'Leveraging Transformer Networks for Semantic Driven Object Location Disambiguation,' *Conference on Robot Learning (CoRL)*, (Under review).
- M. Iovino, **F. I. Doğan**, I. Leite, and C. Smith, 'Interactive Disambiguation for Behavior Tree Execution,' *International Conference on Humanoid Robots (Humanoids)*, (Under review).
- **F. I. Doğan**, I. Torre, and I. Leite, 'Asking Follow-Up Clarifications to Resolve Ambiguities in Human-Robot Conversation,' *International Conference on Human-Robot Interaction (HRI)*, 2022.
- A Panesar, **F. I. Doğan**, and I. Leite, 'Improving Visual Question Answering by Leveraging Depth and Adapting Explainability' *International Conference on Robot & Human Interactive Communication (RO-MAN)*, 2022.
- **F. I. Doğan**, S. Kalkan, and I. Leite, 'Learning to Generate Unambiguous Spatial Referring Expressions for Real-World Environments,' *International Conference on Intelligent Robots and Systems (IROS)*, 2019.
- P. Jonell, P. Fallgren, **F. I. Doğan**, J. Lopes, U. Wennberg, and G. Skantze, 'Crowdsourcing a self-evolving dialog graph,' *International Conference on Conversational User Interfaces (CUI)*, 2019.

- **F. I. Doğan**, İ. Bozcan, M. Celik, and S. Kalkan, ‘Cinet: A learning based approach to incremental context modeling in robots,’ *International Conference on Intelligent Robots and Systems (IROS)*, 2018.
- **F. I. Doğan**, H. Çelikkanat, and S. Kalkan, ‘A Deep Incremental Boltzmann Machine for Modeling Context in Robots,’ *International Conference on Robotics and Automation (ICRA)*, 2018.
- **F. I. Doğan**, H. Çelikkanat, and S. Kalkan, ‘Robotlarda Bağlamın Derin Artırılmış Boltzmann Makineleri ile Modellenmesi,’ *Turkey Robotics Conference (ToRK)*, 2018. (written in Turkish)
- **F. I. Doğan**, S. Kalkan, ‘Bağlamın Hiyerarşik Doğası,’ *Turkey Robotics Conference (ToRK)*, 2016. (written in Turkish)
- O. Yıldız, **F. I. Doğan**, İ. Öztekin, E. Mızrak, and F. T. Y. Vural, ‘A robust normalization method for fMRI data for brain decoding,’ *Signal Processing and Communication Application Conference (SIU)*, 2016.

Refereed Workshop Publications:

- **F. I. Doğan**, ‘Social Robots That Understand Natural Language Instructions and Resolve Ambiguities,’ *RSS Pioneers Workshop*, 2021.
- I. Torre, **F. I. Doğan**, and D. Kontogiorgos, ‘Voice, Embodiment, and Autonomy as Identity Affordances,’ *Workshop on Robo-Identity: Exploring Artificial Identity and Multi-Embodiment*, 2021.
- **F. I. Doğan**, and I. Leite, ‘Open Challenges on Generating Referring Expressions for human-Robot Interaction,’ *Workshop on Natural Language Generation for Human-Robot Interaction (NLG for HRI)*, 2020.
- **F. I. Doğan**, H. Çelikkanat, I. Bozcan, and S. Kalkan, ‘Learning to Increment A Contextual Model,’ *Workshop on Continual Learning, NeurIPS*, 2018.

Technical Reports:

- P. Jonell, M. Bystedt, **F. I. Doğan**, P. Fallgren, J. Ivarsson, M. Slukova, U. Wennberg, J. Lopes, J. Boye, and G. Skantze, ‘Fantom: A crowdsourced social chatbot using an evolving dialog graph,’ *Proceedings of Alexa Prize*, 2018.
- **F. I. Doğan**, and S. Kalkan, ‘Hierarchical Context Modeling Using Incremental Deep Boltzmann Machines,’ *Technical Report No: METU-CENG-TR-2017-01, Dept. of Computer Engineering, Middle East Technical University*, 2017.

TALKS, DEMOS, AND POSTERS

Seminar Talks

- Talking Robotics (a series of seminars about Robotics and its interaction with other relevant fields, such as AI and HRI), 2021
- Oxford Machine Learning Summer School, Unconference Track, 2021
- The Robot Autonomy and Interactive Learning (RAIL) Research Lab, School of Interactive Computing, Georgia Tech, 2021
- Image Lab, Department of Computer Engineering, Middle East Technical University, 2021

System Demonstration

- Invited demo on SIGDIAL 2019

Poster presentations

- AI-CARING Symposium 2022
- SpLU-RoboNLP Workshop at the Conference of the North American Chapter of the Association for Computational Linguistics (NAACL-HLT 2019)
- SoRos Workshop 2018 and 2019
- Amazon Alexa Prize Summit 2018

HONORS, AWARDS AND GRANTS

- Fellowship from the Postdoc-NeT-AI in AI and Robotics (2022) which brings together outstanding early-career researchers with leading German institutions
- RSS Pioneer 2021, selected to participate in the Robotics: Science and Systems (RSS) Pioneers, which brings together the world’s top early-career researchers

- Honourable mention award in CUI 2019
- Student travel grant from ICRA 2018, IROS 2018, NAACL-HLT 2019
- High honor certificates from Middle East Technical University (Spring 2014-2015, Fall 2014-2015, Spring 2013-2014, Fall 2013-2014)
- Honor certificate from Middle East Technical University (Spring 2012-2013)

SERVICES AND VOLUNTEERING *Program Committee Member*

- Robotics: Science and Systems (RSS) Pioneers 2022
- Towards Autonomous Robotic Systems Conference (TAROS) 2021
- Workshop on Spatial Language Understanding and Grounded Communication for Robotics (SpLU-RoboNLP) 2021

Journal Article Referee

- Frontiers in Robotics and AI
- IEEE Robotics and Automation Letters (RA-L)
- Autonomous Robots (AURO)

Conference Paper Referee

- Robotics: Science and Systems (RSS)
- Conference on Robot Learning (CoRL)
- International Conference on Intelligent Robots and Systems (IROS)
- ACM/IEEE Conference on Human-Robot Interaction (HRI)
- Signal Processing and Communication Application Conference (SIU)
- Turkey Robotics Conference (ToRK)

Student Volunteer

- ACM/IEEE International Conference on Human-Robot Interaction (HRI 2022)
- International Conference on Autonomous Agents and Multiagent Systems (AAMAS 2018)

SELECTED OUTREACH

Robotics demonstrations and presentations of current research

- Atlanta Science Festival, Georgia Tech Science and Engineering Day, 2022
- Sveriges Television (SVT), 2020
- The Minister for Higher Education and Research (Matilda Ernkrans), 2019
- Robots Exhibition at the Tekniska Museum, 2019
- Giants event for female and non-binary high school students, 2018
- European Researchers' Night event for high school students, 2016

EXTRA-CURRICULAR ACTIVITIES

- Theater (played in private theaters for 8 years and 5 plays)
- Computer Engineers' Association (a sub-unit of Turkish Engineers' and Architects' Association) board member, 2016-2018
- Student Delegate Committee member at Middle East Technical University, 2010-2011