

FETHİYE IRMAK DOĞAN

Postdoctoral Researcher
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OBJECTIVE	Endowing robots with the ability of semantic reasoning and scene understanding for effectively operating them in human environments
AREAS OF INTEREST	Human-Robot Interaction, Machine Learning, Deep Learning, Artificial Intelligence, Computer Vision
EDUCATION	<p><i>Ph.D. in Computer Science, KTH Royal Institute of Technology</i> 01.2018-03.2023</p> <ul style="list-style-type: none">– Thesis on <i>Robots That Understand Natural Language Instructions and Resolve Ambiguities</i> <p><i>M.Sc. in Computer Engineering, Middle East Technical University</i> 09.2015-12.2017</p> <ul style="list-style-type: none">– Thesis on <i>Hierarchical Incremental Context Modeling on Robots</i>– Graduated with High Honor degree - CGPA : 3.93/4.00 <p><i>B.Sc. in Computer Engineering, Middle East Technical University</i> 09.2010-06.2015</p> <ul style="list-style-type: none">– Graduated with Honor degree - CGPA : 3.40/4.00
EMPLOYMENT, EXPERIENCE AND PROJECTS	<p><i>Postdoctoral researcher at the Division of Robotics, Perception and Learning, KTH Royal Institute of Technology, SWEDEN</i> 03.2023-present</p> <ul style="list-style-type: none">– Working on different follow-up clarification techniques to resolve ambiguities (sourced from semantic or visual uncertainties) in user instructions <p><i>Doctoral researcher at the Division of Robotics, Perception and Learning, KTH Royal Institute of Technology, SWEDEN</i> 01.2018-03.2023</p> <ul style="list-style-type: none">– Working on generation and comprehension of referring expressions (i.e., the expressions describing objects with their distinguishing features) to understand user instructions and resolve ambiguities, supervised by Iolanda Leite <p><i>Visiting scholar at the Robot Autonomy and Interactive Learning (RAIL) Lab, Georgia Institute of Technology, USA</i> 11.2021-04.2022</p> <ul style="list-style-type: none">– Developing a semantically-driven disambiguation method to handle ambiguous user requests with clarifying questions, supervised by Sonia Chernova <p><i>Participating in Oxford Machine Learning Summer School 2021</i> 07.2021-08.2021</p> <ul style="list-style-type: none">– 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><i>Participating in Amazon Alexa Prize, Fantom Social Bot</i> 02.2018-08.2018</p> <ul style="list-style-type: none">– 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><i>Researcher at KOVAN Robotics Research Lab, Department of Computer Engineering, Middle East Technical University, TURKEY</i> 09.2015-12.2017</p> <ul style="list-style-type: none">– Incremental context modeling for robots to make them 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><i>Senior Design Project at Department of Computer Engineering, Middle East Technical University, TURKEY</i> 09.2014-06.2015</p> <ul style="list-style-type: none">– 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><i>Internship at The Maersk Mc-Kinney Moller Institute, University of Southern Denmark, DENMARK</i> 06.2014-09.2014</p>

- 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 01.2019-03.2023

- 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

- PhD Students: Ermanno Bartoli, and Anna Deichler
- Master Students: Shipra Jain, Jiaming Huang, Amrita Panesar, and Georgios Hadjiantonis
- 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**, W. Liu, I. Leite, and S. Chernova, ‘Semantically-Driven Disambiguation for Human-Robot Interaction,’ *Robotics and Automation Letters (RAL)*, (Under review).
- **F. I. Doğan**, G. I. Melsión, and I. Leite, ‘Leveraging Explainability for Understanding Object Descriptions in Ambiguous 3D Environments,’ *Frontiers in Robotics and AI*, 2023.
- **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**, I. Torre, and I. Leite, ‘Asking Follow-Up Clarifications to Resolve Ambiguities in Human-Robot Conversation,’ *International Conference on Human-Robot Interaction (HRI)*, 2022.
- M. Iovino, **F. I. Doğan**, I. Leite, and C. Smith, ‘Interactive Disambiguation for Behavior Tree Execution,’ *International Conference on Humanoid Robots (Humanoids)*, 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 Artırımlı 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.

Workshop Proposals

- M. Pattel*, **F. I. Doğan***, Z. Zeng, K. Baraka, and S. Chernova, ‘Semantic Scene Understanding for Human-Robot Interaction,’ *International Conference on Human-Robot Interaction (HRI)*, 2023.
- W. Johal, L. Phaijit, **F. I. Doğan**, A. Tabrez, and M. Graaf, ‘HRI for Explainable Robotics,’ *International Conference on Robot & Human Interactive Communication (RO-MAN)*, 2023.

Refereed Workshop Publications

- E. Bartoli, **F. I. Doğan**, and I. Leite, ‘Contextualized Knowledge Graph Embeddings for Activity Prediction in Service Robotics,’ *Workshop on Semantic Scene Understanding for Human-Robot Interaction, HRI*, 2023.
- **F. I. Doğan**, ‘Social Robots That Understand Natural Language Instructions and Resolve Ambiguities,’ *RSS Pioneers Workshop, RSS*, 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, HRI*, 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, INLG*, 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

* Equal Contribution

HONORS, AWARDS AND GRANTS

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
- 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

Organization Committee

- Workshop on Semantic Scene Understanding for Human-Robot Interaction, International Conference on Human Robot Interaction (HRI) 2023
- Workshop on HRI for Explainable Robotics, International Conference on Robot & Human Interactive Communication (RO-MAN) 2023
- RSS Pioneers Workshop, Robotics: Science and Systems (RSS) 2022

Program Committee

- Towards Autonomous Robotic Systems Conference (TAROS) 2021
- Workshop on Spatial Language Understanding and Grounded Communication for Robotics (SpLU-RoboNLP) 2021 and 2023

Journal Article Referee

- Frontiers in Robotics and AI
- IEEE Robotics and Automation Letters (RA-L)
- Autonomous Robots (AURO)
- User Modeling and User-Adapted Interaction (UMUAI)

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