

FETHİYE 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> <ul style="list-style-type: none">– Thesis on <i>Robots That Understand Natural Language Instructions and Resolve Ambiguities</i> <p><i>M.Sc., 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., 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 <p><i>High School, 60. Yıl Anatolian High School</i> 09.2006-06.2010</p> <ul style="list-style-type: none">– Graduated - CGPA : 91.56/100– In the top 0.2% out of 2 million applicants entering the nation-wide university entrance exam
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</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 natural language instructions and resolve ambiguities for an effective human-robot interaction, 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 model agnostic method for semantic-driven object location disambiguation in Human-Robot Conversation, 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 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><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

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**, W. Liu, I. Leite, and S. Chernova, ‘Semantic Driven Object Location Disambiguation in Human-Robot Conversation,’ *Robotics and Automation Letters (RAL)*, (In preparation).
- **F. I. Doğan**, G. I. Melsión, and I. Leite, ‘Leveraging Explainability for Understanding Object Descriptions in Ambiguous 3D Environments,’ *Frontiers in Robotics and AI*, 2022.
- **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 Proposal

- 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.

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. Shukova, 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-RobNLP Workshop at the Conference of the North American Chapter of the Association for Computational Linguistics (NAACL-HLT 2019)

* Equal Contribution

HONORS, AWARDS AND GRANTS

- 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
- 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