

# FETHIYE IRMAK DOĞAN

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<b>OBJECTIVE</b>	Endowing robots with the ability of semantic reasoning and scene understanding for autonomously operating them in human environments
<b>AREAS OF INTEREST</b>	Human-Robot Interaction, Machine Learning, Deep Learning, Artificial Intelligence, Computer Vision
<b>EDUCATION</b>	<p><i>Ph.D. in Computer Science, KTH Royal Institute of Technology</i> 01.2018-03.2023 – Thesis on <i>Robots That Understand Natural Language Instructions and Resolve Ambiguities</i></p> <p><i>M.Sc. in Computer Engineering, Middle East Technical University</i> 09.2015-01.2018 – Thesis on <i>Hierarchical Incremental Context Modeling on Robots</i> – Graduated with High Honor degree - CGPA: 3.93/4.00</p> <p><i>B.Sc. in Computer Engineering, Middle East Technical University</i> 09.2010-06.2015 – Graduated with Honor degree - CGPA: 3.40/4.00</p>
<b>EMPLOYMENT, EXPERIENCE AND PROJECTS</b>	<p><i>Postdoctoral researcher at the Division of Robotics, Perception and Learning, KTH Royal Institute of Technology, SWEDEN</i> 03.2023-present – Focusing on continual learning for robots in human environments to understand their routines and help them with their daily household tasks</p> <p><i>Doctoral researcher at the Division of Robotics, Perception and Learning, KTH Royal Institute of Technology, SWEDEN</i> 01.2018-03.2023 – Working on different follow-up clarification techniques (semantic or visual) for robots to resolve ambiguities in user instructions, 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 semantically-driven disambiguation method to handle ambiguous user requests with clarifying questions, 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) 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, supervised by Gabriel Skantze</p> <p><i>Researcher at KOVAN Robotics Research Lab, Department of Computer Engineering, Middle East Technical University, TURKEY</i> 09.2015-01.2018 – Incremental context modeling for robots to make them capable of adapting to challenging real-world environments, supervised by Sinan Kalkan</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, supervised by Fatos Tunay Yarman Vural</p> <p><i>Internship at The Maersk Mc-Kinney Moller Institute, University of Southern Denmark, DENMARK</i> 06.2014-09.2014 – A plugin providing a graphical user interface for automated calibration of UR robot arms, supervised by Norbert Krueger</p> <p><i>Internship at KOVAN Robotics Research Lab, Department of Computer Engineering, Middle East Technical University, TURKEY</i> 06.2013-09.2013 – Visualizing the 2D and 3D representations of the iCub robot’s vision, supervised by Sinan Kalkan</p> <p><i>Part time software developer at Özgür Yazılım Company, TURKEY</i> 02.2013-06.2013 – Taking a role in the development of the Tekir Accounting Program</p>

- TEACHING** *Teaching Assistant at KTH Royal Institute of Technology, SWEDEN* 01.2019-03.2023  
– Master-level machine learning course  
*Teaching Assistant at 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, Rasmus Rudling, and Alex Sleat  
– *High School Intern*: Erik Eriksson  
*Georgia Institute of Technology, USA* 11.2021-04.2022  
– *Master Student*: Aswin Gururaj Prakash
- SCIENTIFIC CONTRIBUTIONS** *Journal Articles*
- J1* **F. I. Doğan**, W. Liu, I. Leite, and S. Chernova, ‘Semantically-Driven Disambiguation for Human-Robot Interaction,’ *ACM Transactions on Human-Robot Interaction (THRI)*, (In preparation).
- J2* **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.
- J3* **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*
- C1* E. Bartoli, **F. I. Doğan**, and I. Leite ‘Streaming Network for Continual Learning of Object Relocations under Household Context Drifts’, *Conference on Robot Learning (CoRL)*, (Under review).
- C2* **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.
- C3* M. Iovino, **F. I. Doğan**, I. Leite, and C. Smith, ‘Interactive Disambiguation for Behavior Tree Execution,’ *International Conference on Humanoid Robots (Humanoids)*, 2022.
- C4* 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.
- C5* **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.
- C6* 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.
- C7* **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.
- C8* **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.
- C9* **F. I. Doğan**, H. Çelikkanat, and S. Kalkan, ‘Robotlarda Bağlamın Derin Artırmalı Boltzmann Makineleri ile Modellenmesi,’ *Turkey Robotics Conference (ToRK)*, 2018. (written in Turkish)

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\* Equal Contribution

C10 **F. I. Doğan**, S. Kalkan, ‘Bağlammın Hiyerarşik Doğası,’ *Turkey Robotics Conference (ToRK)*, 2016. (written in Turkish)

C11 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

P1 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.

P2 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

W1 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.

W2 **F. I. Doğan**, ‘Social Robots That Understand Natural Language Instructions and Resolve Ambiguities,’ *RSS Pioneers Workshop, RSS*, 2021.

W3 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.

W4 **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.

W5 **F. I. Doğan**, H. Çelikkanat, I. Bozcan, and S. Kalkan, ‘Learning to Increment A Contextual Model,’ *Workshop on Continual Learning, NeurIPS*, 2018.

#### Technical Reports

T1 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.

T2 **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 Institute of Technology, 2021
- Image Lab, Department of Computer Engineering, Middle East Technical University, 2021

#### System Demonstration

- Invited demo on SIGDIAL Conference 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**

*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*

- KTH School of Electrical Engineering and Computer Science Lab Tours, 2023
- 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