FETHİYE IRMAK DOĞAN

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OBJECTIVE

My research aims to deploy autonomous robots in human environments to facilitate people's lives. To achieve this goal, there are several research challenges, such as understanding users (e.g., comprehending their natural language instructions and analyzing their nonverbal cues) and observing the interaction environment (e.g., the context for social appropriateness, the visual scene, and the semantic properties of the objects in the environment). My research has focused on such varying components to achieve my long-term vision.

INTERESTS

Human-Robot Interaction, Robot Learning, Deep Learning, Explainability

EDUCATION

Ph.D. in Computer Science, KTH Royal Institute of Technology 01.2018-03.2023
- Thesis on *Robots That Understand Natural Lang. Inst. and Resolve Ambiguities*

M.Sc. in Computer Engineering, Middle East Technical University 09.2015-01.2018
- Thesis on *Hierarchical Incremental Context Modeling on Robots*
- Graduated with High Honor degree - CGPA: 3.93/4.00

B.Sc. in Computer Engineering, Middle East Technical University 09.2010-06.2015
- Graduated with Honor degree - CGPA: 3.40/4.00

EMPLOYMENT, EXPERIENCE AND PROJECTS

Postdoctoral researcher at ***University of Cambridge****, UK* 04.2024-present
- Generating socially appropriate and adaptive robot behavior leveraging LLMs and explainability, working in the AFAR Lab with Prof. Hatice Gunes

Postdoctoral researcher at ***KTH Royal Institute of Technology*** 03.2023-04.2024
- Continual learning for robots in human environments to help people with their daily tasks, working with Prof. Iolanda Leite's research group

Doctoral researcher at KTH Royal Institute of Technology 01.2018-03.2023
- Follow-up clarification techniques (semantic or visual) for robots to resolve ambiguities in user instructions, supervised by Prof. Iolanda Leite

Visiting scholar at ***Georgia Institute of Technology****, USA* 11.2021-04.2022
- Developing a semantically-driven disambiguation method to handle ambiguous user requests with clarifying questions, supervised by Prof. Sonia Chernova

Participating in Oxford Machine Learning Summer School 07.2021-08.2021
- Selected to participate in the highly selective summer school ($\sim$ 15% acceptance rate) for best-in-class training on machine learning and deep learning

Participating in Amazon Alexa Prize, KTH Fantom Team 02.2018-08.2018
- Selected as one of 8 teams among the applicants from leading 195 universities to create a social bot, supervised by Prof. Gabriel Skantze

Researcher at ***Middle East Technical University****, Turkey* 09.2015-01.2018
- Incremental context modeling for robots to make them capable of adapting to challenging real-world environments, supervised by Prof. Sinan Kalkan

Senior Design Project at Middle East Technical University 09.2014-06.2015
- 3D animation of fMRI data to visualize the cognitive processes in the brain, supervised by Prof. Fatos Tunay Yarman Vural

Research intern at ***University of Southern Denmark*** 06.2014-09.2014
- A plugin providing a graphical user interface for automated calibration of UR robot arms, supervised by Prof. Norbert Krueger

Research intern at Middle East Technical University 06.2013-09.2013
- Visualizing the 2D and 3D representations of the iCub robot's vision, supervised by Prof. Sinan Kalkan

Part time software developer at Özgür Yazılım Company 02.2013-06.2013
- Taking a role in the development of the Tekir Accounting Program

TEACHING

Guest Lecturer in the Affective AI Course, University of Cambridge 11.2024
Teaching Assistant at Interaction Design, University of Cambridge 04.2024-06.2024
Lecturer at Master-level social robotics course, KTH 10.2023-01.2024
Teaching Assistant at Master-level machine learning course, KTH 01.2019-03.2023
Teaching Assistant at C programming language course, METU 02.2014-06.2014

MENTORING

University of Cambridge 04.2024-present
- *Master Thesis Supervision*: Rafal Karpiński (Utrecht University)
- *BS student*: Lara Horne, Yuval Weiss
- *Google DeepMind Intern*: Yifei Shi (King's College London)
- *Pembroke College Intern*: Rahma Elsheikh (Princeton University)
- *Visiting MS Students*: Jesher Joshua (Vellore Institute of Technology)
- *Visiting BS Students*: Umut Ozyurt (METU), Gizem Çınar (Bilkent University), Zeynep Altundal (Sabanci University)

KTH Royal Institute of Technology 01.2019-02.2025
- *PhD Students*: Ermanno Bartoli, and Anna Deichler
- *Master Thesis Supervision*:
  - Alexander Leszczynski: '*LLMs and Behavior Trees for User Instructions*', 2025
  - Aiman Shenawa, '*Task specific evaluation of Large Language Models*', 2025
  - Georgios Hadjiantonis: '*Topic change in robot-moderated group discussion*', 2024
  - Amrita Panesar: '*Improving VQA with Depth and Adapting Explainability*', 2022
- *MS Students*: Shipra Jain, Jiaming Huang, Francesca Cipelli, and Beatriz Nogueira
- *Research Engineers*: Shreya Kohli, Rasmus Rudling, and Alex Sleat
- *High School Intern*: Erik Eriksson

Georgia Institute of Technology 11.2021-04.2022
- *MS Student*: Aswin Gururaj Prakash

HONORS AND AWARDS

- Seal of Excellence Award granted by the European Commission after a rigorous international expert project proposal evaluation (2025)
- Research Associate at Darwin College, University of Cambridge, awarded through a competitive process for research excellence and academic merit (2024)
- Special Recognition for Outstanding Reviews, HRI 2024
- Fellowship from Postdoc-NeT-AI (2022) which brings together outstanding early-career researchers in the field of artificial intelligence and robotics
- 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 from Int. Conf. on Conversational User Interfaces 2019
- High honour certificates (Spring 2014-2015, Fall 2014-2015, Spring 2013-2014, Fall 2013-2014), and honour certificate (Spring 2012-2013) from METU

GRANTS AND FUNDS

- Contributor to the Seed Fund Grant (≈ 10.000 £), University of Cambridge, 2024
- Travel grant from ACL Annual Conference of NAACL-HLT 2019
- Travel grant from IEEE Int. Conf. on Robotics and Automation (ICRA) 2018
- Travel grant from IEEE Int. Conf. on Intelligent Robots and Systems (IROS) 2018

INVITED TALKS

- Keynote speaker on Collective Generative Futures, CHIA Early Career Conf., 2025
- Science lunchtime seminar, Darwin College, University of Cambridge, 2025
- Google DeepMind Research Ready Program, University of Cambridge, 2024
- Talking Robotics, a series of seminars about Robotics and AI, 2021
- Oxford Machine Learning Summer School, Unconference Track, 2021
- RAIL Research Lab, Georgia Institute of Technology, 2021
- Image Lab, Middle East Technical University, 2021

SCIENTIFIC CONTRIBUTIONS

Journal Articles

J1 E. Yadollahi*, **F. I. Doğan***, Y. Zhang, B. Nogueira, T. Guerreiro, S. Levy-Tzedek, and I. Leite, ' Shaping Perceptions: How Expectations Influence Evaluations of Robot Behavior and Explanations?'. (in prep. for *Int. Journal of Human-Computer Studies*)

J2 N. Churamani, S. Checker, **F. I. Doğan**, H. L. Chiang, and H. Gunes 'Feature Aggregation with Latent Generative Replay for Federated Continual Learning of Socially Appropriate Robot Behaviours', *arXiv*. (under review for *IEEE RA-L*)

J3 **F. I. Doğan**, G. I. Melsión, and I. Leite, 'Leveraging Explainability for Understanding Object Desc. in Ambiguous 3D Environments,' *Frontiers in Robotics and AI*, 2023.

J4 **F. I. Doğan**, S. Gillet, E. J. Carter, and I. Leite, 'The Impact of Adding Perspective-Taking to Spatial Referencing during Human-Robot Interaction,' *RAS*, 2020.

Refereed Conference Publications

C1 **F. I. Doğan**, W. Liu, I. Leite, and S. Chernova, 'Semantically-Driven Disambiguation for Human-Robot Interaction,' *arXiv*. (in prep. for *IEEE RO-MAN*)

C2 E. Bartoli, **F. I. Doğan**, and I. Leite 'Streaming Network for Cont. Learning of Object Relocations under Household Context Drifts', *arXiv*. (in prep. for *IEEE RO-MAN*)

C3 **F. I. Doğan**, U. Ozturk, G. Cinar, and H. Gunes, 'GRACE: Generating Socially Appr. Robot Actions Leveraging LLMs and Human Explanations', *IEEE ICRA*, 2025.

C4 G. Hadjiantonis, S. Gillet, M. Vázquez, I. Leite, and **F. I. Doğan**, 'Let's move on: Topic Change in Robot-Facilitated Group Discussions', *IEEE RO-MAN*, 2024.

C5 **F. I. Doğan**, I. Torre , and I. Leite, 'Asking Follow-Up Clarifications to Resolve Ambiguities in Human-Robot Conversation,' *ACM/IEEE HRI*, 2022.

C6 M. Iovino, **F. I. Doğan**, I. Leite, and C. Smith, 'Interactive Disambiguation for Behavior Tree Execution,' *IEEE Humanoids*, 2022.

C7 A Panesar, **F. I. Doğan**, and I. Leite, 'Improving Visual Question Answering by Leveraging Depth and Adapting Explainability,' *IEEE RO-MAN*, 2022.

C8 **F. I. Doğan**, S. Kalkan, and I. Leite, 'Learning to Generate Unambiguous Spatial Referring Expressions for Real-World Environments,' *IEEE IROS*, 2019.

C9 P. Jonell, P. Fallgren, **F. I. Doğan**, J. Lopes, U. Wennberg, and G. Skantze, 'Crowdsourcing a self-evolving dialog graph,' *ACM CUI*, 2019.

C10 **F. I. Doğan***, İ. Bozcan*, M. Celik, and S. Kalkan, 'Cinet: A learning based approach to incremental context modeling in robots,' *IEEE IROS*, 2018.

C11 **F. I. Doğan**, H. Çelikkanat, and S. Kalkan, 'A Deep Incremental Boltzmann Machine for Modeling Context in Robots,' *IEEE ICRA*, 2018.

C12 **F. I. Doğan**, H. Çelikkanat, and S. Kalkan, 'Robotlarda Bağlamın Derin Artırımlı Boltzmann Makineleri ile Modellenmesi,' *Turkey Robotics Conference (ToRK)*, 2018.

C13 **F. I. Doğan**, S. Kalkan, 'Bağlamın Hiyerarşik Doğası,' *Turkey Robotics Conference (ToRK*), 2016.

C14 O. Yıldız, **F. I. Doğan**, İ. Öztekin, E. Mızrak, and F. T. Y. Vural, 'A robust normalization method for fMRI data for brain decoding,' *IEEE SIU*, 2016.

Workshop Proposals

P1 E. Yadollahi, **F. I. Doğan**, M. Romeo, D. Kontogiorgos, P. Qian, and Y. Zhang, 'Exp. in Human-Robot Collob.: Real-World Concerns,' *In Comp. of ACM/IEEE HRI*, 2025.

P2 E. Yadollahi, M. Romeo, **F. I. Doğan**, W. Johal, M. D. Graaf, S. Levy-Tzedek and I. Leite, 'Exp. for Human-Robot Collaboration,' *In Comp. of ACM/IEEE HRI*, 2024.

P3 M. Pattel*, **F. I. Doğan***, Z. Zeng, K. Baraka, and S. Chernova, 'Semantic Scene Understanding for Human-Robot Interaction,' *In Comp. of ACM/IEEE HRI*, 2023.

P4 W. Johal, L. Phaijit, **F. I. Doğan**, A. Tabrez, and M. Graaf, 'HRI for Explainable Robotics,' *IEEE RO-MAN*, 2023.

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* Equal Contribution

Refereed Workshop Publications

W1 E. Bartoli, **F. I. Doğan**, and I. Leite, 'Contextualized Knowledge Graph Embeddings for Activity Prediction in Service Robotics,' *Workshop on SSU for HRI*, 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*, HRI 2021.

W4 **F. I. Doğan**, and I. Leite, 'Open Challenges on Generating Referring Expressions for Human-Robot Interaction,' *Workshop on NLG for HRI*, 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, Dept. of Computer Eng., METU*, 2017.

POSTERS AND DEMOS

- AI-CARING Symposium 2022
- Invited demo on SIGDIAL Conference 2019
- SpLU-RoboNLP Workshop at the NAACL-HLT Conference 2019
- SoRos Workshop 2018 and 2019
- Amazon Alexa Prize Summit 2018

SERVICES AND VOLUNTEERING

Organization Committee

- Robotics and Embodied Intelligence Workshop, CHIA, University of Cambridge, 2025
- Workshop on Expl. in Human-Robot Collaboration: Real-World Concerns, HRI 2025
- Workshop on Explainability for Human-Robot Collaboration, HRI 2024
- Workshop on Semantic Scene Understanding for Human-Robot Interaction, HRI 2023
- Workshop on HRI for Explainable Robotics, RO-MAN 2023
- RSS Pioneers Workshop, Robotics: Science and Systems (RSS), 2022

Program Committee

- International Conference on Multimodal Interaction (ICMI), 2024
- Affective Computing and Intelligent Interaction Conference (ACII), 2024
- Towards Autonomous Robotic Systems Conference (TAROS), 2021
- SpLU-RoboNLP Workshop, 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 Robotics and Automation (ICRA)
- International Conference on Human-Robot Interaction (HRI)
- International Conference on Intelligent Robots and Systems (IROS)
- International Conference on Multimodal Interaction (ICMI)
- International Conf. on Robot & Human Interactive Communication (RO-MAN)
- Signal Processing and Communication Application Conference (SIU)
- Turkey Robotics Conference (ToRK)

Student Volunteer

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

SELECTED OUTREACH

- Featured in BBC Click by Spencer Kelly for his 1000th and final episode, 2025
- HE+ Hampshire Lecture, Trinity Hall, University of Cambridge 2025
- Trinity Hall Science Open Day Lecture, University of Cambridge 2025
- Human Machine Interaction Showcase, University of Cambridge, 2025
- Swedish Foundation for Strategic Research (SSF), 2023
- KTH School of Electrical Engineering and Computer Science Lab Tours, 2023
- Atlanta Science Festival, Georgia Tech Science and Engineering Day, 2022
- Featured in a documentary on Sveriges Television (SVT), 2020
- Sweden's Minister for Higher Education and Research (Matilda Ernkrans), 2019
- Robots Exhibition at the Swedish Tekniska Museum, 2019
- Giants event for female and non-binary high school students, 2018
- Live broadcast on national Turkish TV (Kanal B) on image processing and AI, 2017
- European Researchers' Night event for high school students, 2016

EXTRA-CURRICULAR ACTIVITIES

- Member of the Dept. Research Staff Forum, University of Cambridge (2024-present)
- Theater (played in private theatres for 8 years and 5 plays)
- Computer Engineers' Association board member, 2016-2018
- Student Delegate Committee member at Middle East Technical University, 2010-2011