

CONTACT INFORMATION	İzmir University of Economics, Department of Computer Engineering, A406	+90-232-488-8286 alper.demir@ieu.edu.tr
RESEARCH INTERESTS	Machine Learning, Reinforcement Learning, Multi-Agent Reinforcement Learning	
EDUCATION	<b>Middle East Technical University (METU)</b> , Ankara, Turkey  <b>Ph.D., Computer Engineering</b> , November 2019 <ul style="list-style-type: none"> <li>• Topic: <i>Improving Reinforcement Learning using Distinctive Clues from the Environment</i></li> <li>• CGPA: 3.93 / 4.00</li> <li>• Advisor: Prof. Dr. Faruk Polat , Co-Advisor: Dr. Erkin Çilden</li> </ul> <b>M.Sc., Computer Engineering</b> , August 2016 <ul style="list-style-type: none"> <li>• GPA: 3.79 / 4.00</li> <li>• Topic: <i>Effective Subgoal Discovery and Option Generation in Reinforcement Learning</i></li> <li>• Advisor: Prof. Dr. Faruk Polat</li> </ul> <b>B.Sc., Computer Engineering</b> , June 2014 <ul style="list-style-type: none"> <li>• GPA: 3.36 / 4.00, HONOR 7 Semesters, HIGH HONOR 1 Semester</li> <li>• Erasmus Program : Wrocław Uni. of Technology, Wrocław, POLAND, 2013</li> </ul>	
ACADEMIC EXPERIENCE	<b>Postdoctoral Researcher</b> August 2024 - ... Autonomous Agents Research Group, University of Edinburgh  <b>Assistant Prof.</b> February 2020 - ... Department of Computer Engineering, Izmir University of Economics  <b>Research &amp; Teaching Assistant</b> September 2014 - November 2019 Department of Computer Engineering, Middle East Technical University Supervisor: Prof. Dr. Faruk Polat, Co-Supervisor: Dr. Erkin Çilden	
INDUSTRY EXPERIENCE	Software Developer, BTT Inc., METU Technopolis 2013-2014 - Developing applications on Android - Involving in Web Development Intern, Turkish Aerospace Industries (TAI) Summer 2012 - Working with senior developers in designing and developing software tools - Writing tests for Human Machine Interface partition	
SOCIAL ACTIVITIES	METU Amateur Photography Club	
INTERESTS AND HOBBIES	Basketball, Photography, Cinema	
PROJECTS	- <i>Forming Useful Memory in Partially Observable Reinforcement Learning</i> , Scientific and Technological Research Council of Turkey (TÜBİTAK), Grant No: 120E427, 2021 - 2023, İzmir, Turkey - <i>Yök Program Ve Kontenjan Yönetim Sistemi (Yök Pkys)</i> , Scientific and Technological Research Council of Turkey (TÜBİTAK), Grant No: 115G086, 2018 - 2019, Ankara, Turkey - <i>Subgoal Identification in Sequential Decision Making under Partial Observability</i> , Scientific and Technological Research Council of Turkey (TÜBİTAK), Grant No: 215E250, 2016 - 2018, Ankara, Turkey	

## PUBLICATIONS

1. Demir, A., Çilden, E. & Polat, F. *A history tree heuristic to generate better initiation sets for options in reinforcement learning* in *Proceedings of the Twenty-second European Conference on Artificial Intelligence (ECAI)* (2016), 1644–1645. doi:10.3233/978-1-61499-672-9-1644.
2. Demir, A., Çilden, E. & Polat, F. *Local roots: A tree-based subgoal discovery method to accelerate reinforcement learning* in *Joint European Conference on Machine Learning and Knowledge Discovery in Databases (ECML/PKDD)* (2016), 361–376. doi:10.1007/978-3-319-46227-1\_23.
3. Demir, A., Çilden, E. & Polat, F. *A Concept Filtering Approach for Diverse Density to Discover Subgoals in Reinforcement Learning* in *2017 IEEE 29th International Conference on Tools with Artificial Intelligence (ICTAI)* (2017), 1–5. doi:10.1109/ICTAI.2017.00012.
4. Demir, A., Çilden, E. & Polat, F. *Generating Effective Initiation Sets for Subgoal-Driven Options*. *Advances in Complex Systems* **22**. doi:10.1142/S0219525919500012 (2019).
5. Demir, A., Çilden, E. & Polat, F. *Landmark Based Reward Shaping in Reinforcement Learning with Hidden States* in *Proceedings of the 18th International Conference on Autonomous Agents and MultiAgent Systems* (Int. Foundation for Autonomous Agents and Multiagent Systems, 2019), 1922–1924. ISBN: 978-1-4503-6309-9. <<http://dl.acm.org/citation.cfm?id=3306127.3331964>>.
6. Demir, A., Çilden, E. & Polat, F. *Automatic landmark discovery for learning agents under partial observability*. *The Knowledge Engineering Review* **34**. doi:10.1017/S026988891900002X (2019).
7. Demir, A., Çilden, E. & Polat, F. *Landmark based guidance for reinforcement learning agents under partial observability*. *International Journal of Machine Learning and Cybernetics*, 1–21 (2022).
8. Dilek, İ., Oğuz, K. & Demir, A. *Behaviour Analysis of Izmir Residents Using Public Wi-Fi Access Point Usage* in *2022 3rd International Informatics and Software Engineering Conference (IISEC)* (2022), 1–6.
9. Demir, A. *Learning what to memorize: Using intrinsic motivation to form useful memory in partially observable reinforcement learning*. *Applied Intelligence*, 1–19 (2023).
10. Başoğlu, A. O., Çekirdek, H., Nakipoğlu, K., Yağcı, S. & Demir, A. *Analyzing Traffic Patterns in Izmir: A Study on Busy Hours and Congestion* in *2024 Innovations in Intelligent Systems and Applications Conference (ASYU)* (2024), 1–6.
11. Arslan, A., Titiz, İ. E., Gürcan, E. C. & Demir, A. *Water Consumption Dynamics in Izmir: Analyzing Influences of District, Seasonality, and External Events* in *2024 Innovations in Intelligent Systems and Applications Conference (ASYU)* (2024), 1–6.

## ACADEMIC SERVICE

### Conference Reviewing

Association for the Advancement of Artificial Intelligence (2022)

European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases (2021, 2022)

International Informatics and Software Engineering Conference (2022)

Multi-disciplinary Conference on Reinforcement Learning and Decision Making (2025)

### Journal Reviewing

Applied Intelligence (2023, 2024)

Artificial Intelligence Review (2024)

International Journal of Machine Learning and Cybernetics (2024)

Artificial Intelligence Communications (2024)

Knowledge-based Systems (2024)

Machine Learning (2024)

#### REFERENCES

Prof. Dr. Faruk Polat, [polat@ceng.metu.edu.tr](mailto:polat@ceng.metu.edu.tr)  
Department of Computer Engineering, Middle East Technical University  
Ankara, Turkey

Dr. Erkin Çilden, [erkin.cilden@stm.com.tr](mailto:erkin.cilden@stm.com.tr)  
STM Defense Technologies Engineering and Trade Inc.  
Ankara, Turkey

Prof. Dr. İsmail Hakkı Toroslu, [toroslu@ceng.metu.edu.tr](mailto:toroslu@ceng.metu.edu.tr)  
Department of Computer Engineering, Middle East Technical University  
Ankara, Turkey

Assoc. Prof. Dr. Yusuf Sahillioğlu, [ys@ceng.metu.edu.tr](mailto:ys@ceng.metu.edu.tr)  
Department of Computer Engineering, Middle East Technical University  
Ankara, Turkey

Assoc. Prof. Dr. Sinan Kalkan, [skalkan@ceng.metu.edu.tr](mailto:skalkan@ceng.metu.edu.tr)  
Department of Computer Engineering, Middle East Technical University  
Ankara, Turkey