

# Hüseyin Aydın

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Department of Computer Engineering  
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## Education

**Ph.D., Computer Engineering,**  
Middle East Technical University, 2017 - 2022  
*Supervisor: Prof. Dr. Faruk Polat*  
*Co-supervisor: Dr. Erkin Çilden*  
GPA: 3.64/4.00

**M. Sc., Computer Engineering,**  
Middle East Technical University, 2015 - 2017  
*Supervisor: Prof. Dr. Faruk Polat*  
GPA: 3.71/4.00

**B. Sc., Computer Engineering,**  
Middle East Technical University, 2010 - 2015  
GPA: 3.41/4.00

## Work Experience

**Utrecht University**  
Post-Doctoral Researcher, Aug, 2023 - Present  
*Supervisor: Prof. Dr. Pınar Yolum*

**Middle East Technical University**  
Research and Teaching Assistant, Oct, 2015 - Present

**Software Research & Development Consultancy**  
Part-time Software Developer, Nov, 2013 - Dec, 2014

**LockSmith Software Technologies**  
Intern Software Developer, Summer 2013

**Middle East Technical University**  
Student Assistant, 2012 Spring  
CENG230 - Introduction to C Programming

## Dissertations

“Automatic Identification of Transitional Bottlenecks in Reinforcement Learning under Partial Observability”  
*M.Sc. Thesis, Middle East Technical University, Dep. of Computer Engineering, 2017*

“Using Frequencies of Transitions to Improve Reinforcement Learning with Hidden States”  
*Ph.D. Thesis, Middle East Technical University, Dep. of Computer Engineering, 2022*

## Research Projects

**Solving Partially Observable Privacy Conflicts with Multi-Agent Reinforcement Learning**  
Supported by the Scientific and Technological Research Council of Turkey (TÜBİTAK) through BİDEB 2219 International Postdoctoral Research Scholarship Program.  
Aug, 2023 - Present

**Program and Capacity Management System  
for Council of Higher Education (YÖK)**

Supported by the Scientific and Technological Research Council of Turkey  
(TÜBİTAK) under Grant No. 115G086.  
Sep, 2018 - May, 2020

**A Stakeholder Oriented Intelligent System for Energy Retrofit**

Supported by British Council and the Scientific and Technological  
Research Council of Turkey  
(TÜBİTAK) under Grant No. 217M519.  
June, 2018 - Sep, 2018

**Subgoal Identification in Sequential Decision Making under  
Partial Observability**

Supported by the Scientific and Technological Research Council of Turkey  
(TÜBİTAK) under Grant No. 215E250.  
May, 2016 - May, 2018

Publications

M. İlayda Bal, H.Aydın, C. İyigün, F. Polat, “Potential-based reward shaping using state–space segmentation for efficiency in reinforcement learning”, *Future Generation Computer Systems*, Vol. 157, pp.469-484, August, 2024

H.Aydın, “Assisting Users in Privacy Conflicts with Partially Observable Multi-Agent Reinforcement Learning” *In HHAI 2024, 3<sup>rd</sup> International Conference on Hybrid Human Artificial Intelligence*, June, 2024, Malmo, Sweden

M. İlayda Bal, C. İyigün, F. Polat, H.Aydın, “Population-based exploration in reinforcement learning through repulsive reward shaping using eligibility traces”, *Annals of Operations Research*, January, 2024

H.Aydın, E. Çilden, F. Polat, “Using chains of bottleneck transitions to decompose and solve Reinforcement Learning tasks with hidden states”, *Future Generation Computer Systems*, Vol. 133, pp.153-168, August, 2022

H.Aydın, E. Çilden, F. Polat, “Compact Frequency Memory for Reinforcement Learning with Hidden States” *In PRIMA 2019, 22<sup>th</sup> International Conference on Principle and Practice of Multi-agent Systems*, October, 2019, Torino, ITALY

H.Aydın, E. Çilden, F. Polat, “Using Transitional Bottlenecks to Improve Learning in Nearest Sequence Memory Algorithm” *In ICTAI 2017, 29<sup>th</sup> International Conference on Tools with Artificial Intelligence*, November, 2017, Boston, MA, USA

M. Gençtürk, E. Alpay, G. B. L. Ertürkmen, A. Doğaç, H. Aydın, “Self-Management of Patients with Severe Arthritis through a Personal Health System: the Turkish Case Study in the PALANTE Project”, *In eChallenges 2014 Conference*, October, 2014, Belfast, IRELAND

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|-----------------------|--|--|
| Translations          | <p>H.Aydm, F. Yarman Vural, “Derin Modellerin Eđitiminde Eniyileme” [Optimization for Training Deep Models]. In “<i>Derin Öğrenme</i>” [<i>Deep Learning (Goodfellow et. al.)</i>] (pp. 273 - 317). Buzdađı Yayınevi, October, 2018, Ankara, TURKEY</p> <p>H.Aydm, F. Yarman Vural, “Dođrusal Faktör Modelleri” [Linear Factor Models]. In “<i>Derin Öğrenme</i>” [<i>Deep Learning (Goodfellow et. al.)</i>] (pp. 493 - 504). Buzdađı Yayınevi, October, 2018, Ankara, TURKEY</p>   |  |
| Teaching              | <p><b>CENG240 - Prog. with Python for Engineers:</b> 2022 Fall<br/> <b>CENG310 - Alg. &amp; Data Struc. with Python:</b> 2022 Spring</p>   |  |
| Teaching Assistanship | <p><b>CENG111 - Intr. to Computer Engineering Concepts:</b> 2015-2021 Fall<br/> <b>CENG223 - Discrete Comp. Struc.:</b> 2022 Fall<br/> <b>CENG240 - Prog. with Python for Engineers:</b> 2019-2020 Spring, 2020 Fall<br/> <b>CENG242 - Programming Language Concepts:</b> 2016-2018, 2020-2021 Spring<br/> <b>CENG315 - Algorithms:</b> 2021 Fall<br/> <b>CENG462 - Artificial Intelligence:</b> 2019-2020 Fall<br/> <b>CENG492 - Computer Engineering Design II:</b> 2015 Spring<br/> <b>CENG567 - Design and Analysis of Algorithms:</b> 2015 Fall<br/> <b>CENG580 - Multigent Systems:</b> 2019-2021 Spring</p> |  |
| Languages             | <p>Turkish (native), English (advanced), Italian (beginner), Dutch (beginner)</p>  |  |
| Skills                | <p>Python, Haskell, C/C++, Java, Vim, Eclipse, Django, Flask</p>   |  |
| References            | <p>Prof. Dr. Faruk Polat<br/> Department of Computer Engineering<br/> Middle East Technical University<br/> polat@ceng.metu.edu.tr,+90 (312) 210-5543</p>  | <p>Prof. Dr. Göktürk Üçoluk<br/> Department of Computer Engineering<br/> Middle East Technical University<br/> ucoluk@ceng.metu.edu.tr,+90 (312) 210-5584</p> <p>Prof. Dr. Fatoş Yarman Vural<br/> Department of Computer Engineering<br/> Middle East Technical University<br/> vural@ceng.metu.edu.tr,+90 (312) 210-5595</p> |
|                       |  | <p>Assoc. Prof. Dr. Sinan Kalkan<br/> Department of Computer Engineering<br/> Middle East Technical University<br/> skalkan@ceng.metu.edu.tr,+90 (312) 210-5547</p>  |