Abdullah Akgül PhD Candidate, Computer Science

Curriculum Vitæ Summary

I have been a computer and math geek since childhood, learning through curiosity and trial-and-error. Today, I am a machine learning researcher specializing in reinforcement learning, deep learning, and probabilistic modeling, with publications at top venues such as NeurIPS and ICLR. I am skilled in developing machine learning systems, collaborating across disciplines, and mentoring students. I am a versatile researcher who can quickly adapt to new domains in machine learning.

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Education

2023–on **PhD in Computer Science**, University of Southern Denmark, Odense, Denmark

2020–2022 **MSc in Computer Engineering**, Istanbul Technical University, Istanbul, Turkey (GPA: 4.0/4.0)

2015–2020 **BSc in Computer Engineering**, Istanbul Technical University, Istanbul, Turkey (GPA: 3.7/4.0)

Work Experience

2023–on **Salaried PhD**, Department of Mathematics and Computer Science, University of Southern Denmark
- Led reinforcement learning research, resulting in a NeurIPS 2024 paper and ongoing preprints.
- Collaborated with the Intelligent Autonomous Systems group at TU Darmstadt led by Jan Peters, leading to a submission.
- Contributed to open-source codebases (e.g., MOMBO, ObjectRL) adopted by the research community.

2021–2023 **Research and Teaching Assistant**, Artificial Intelligence and Data Science Engineering, Istanbul Technical University
- Conducted research in computer vision and uncertainty quantification, leading to a publication at ICLR 2022.

2020–2020 **Part-time Machine Learning Engineer**, R&D and Innovation, Vakifbank
- Developed Siamese CNNs for fraud detection in signature verification.
- Achieved 95% test accuracy on internal data and 88% on CEDAR benchmark, reducing fraud risk.
- Applied various CNNs (MobileNetV2, ResNet50) using Keras/TensorFlow.

2019–2019 **Research Intern**, Artificial Intelligence and Robotics Laboratory (AIRLab), Istanbul Technical University
- Built simulated robot manipulation environments in PyBullet for kitchen tasks.
- Implemented Deep Deterministic Policy Gradient (DDPG) and Soft Actor-Critic (SAC) for robotic control.
- Integrated PyBullet and MoveIt environments for inverse kinematics calculations.

2018–2018 **Front-End Developer, Intern**, Dogus Technology, Istanbul, Turkey
- Built front-end web applications (JavaScript, Node.js) and back-office systems.
- Designed secure login pages, error-handling flows, and responsive user interfaces.
- Built an Arduino-based chatbot integrated with Slack for sensor-user interaction.

Publication Highlights

2024 **Deterministic Uncertainty Propagation for Improved Model-Based Offline Reinforcement Learning**.
Akgül, A.; Haussmann, M; Kandemir, M. Advances in Neural Information Processing Systems (NeurIPS).
PDF aportekila/MOMBO Video Slides Poster

2025 **Overcoming Non-stationary Dynamics with Evidential Proximal Policy Optimization**.
Akgül, A.; Baykal, G; Haussmann, M; Kandemir, M. arXiv preprint (under review at TMLR).
PDF

2022 **Evidential Turing Processes**.
Kandemir, M; **Akgül, A.**; Haussmann, M; Unal, G. International Conference on Learning Representations (ICLR).
PDF aportekila/EvidentialTuringProcess Video Slides

2025 **ObjectRL: An Object-Oriented Reinforcement Learning Codebase**.
Baykal, G; **Akgül, A.**; Haussmann, M; Tasdighi, B; Werge, N; Wu, Y.S; Kandemir, M. arXiv preprint (under review at JMLR MLOSS).
PDF adinlab/objectrl Documentation

2024 **Continual Learning of Multi-modal Dynamics with External Memory**.
Akgül, A.; Kandemir, M; Unal, G. Learning for Dynamics and Control Conference (L4DC).
PDF aportekila/CDDP-Continual-Learning-of-Multi-modal-Dynamics-with-External-Memory

Technical Skills

</> Programming & Frameworks	Python, PyTorch, C, C++, TensorFlow, Keras, ROS
Machine Learning	Reinforcement Learning, Deep Learning, Probabilistic Modeling, Bayesian Inference, Computer Vision, Large Language Models, Bandits, Federated Learning
Tools & Platforms	MATLAB, Git, Linux, LaTeX, Docker, Weights & Biases
Languages	English (Fluent), Turkish (Native), Danish (Basic)

Teaching & Mentorship

2023–on **Teaching Assistant**, Department of Mathematics and Computer Science, University of Southern Denmark
- Delivered exercise sessions on core machine learning concepts; guided students through assignments and provided constructive feedback.
- Mentored 2+ MSc students on their theses, supporting research design and implementation.

2021–2023 **Research and Teaching Assistant**, Artificial Intelligence and Data Science Engineering, Istanbul Technical University
- Teaching Assistant for Python Programming, Probability & Statistics, and Computer Architecture courses.
- Supervised undergraduate students, enhancing their problem-solving and programming skills.
- Mentored 3+ BSc students on final projects, leading to 2 workshop papers at NeurIPS and ICLR.
- Mentored 1 MSc student on thesis work, resulting in a TMLR publication.

Conference Activities

2025 18th European Workshop on Reinforcement Learning (EWRL 2025), Tübingen, Germany

2025 Danish Digitalization, Data Science and AI (D3A 3.0), Nyborg, Denmark

2024 The Thirty-Eighth Annual Conference on Neural Information Processing Systems (NeurIPS 2024), Vancouver, Canada

2024 Danish Digitalization, Data Science and AI (D3A 2.0), Nyborg, Denmark

2024 The Forty-first International Conference on Machine Learning (ICML 2024), Vienna, Austria

2024 6th Symposium on Advances in Approximate Bayesian Inference (AABI), Vienna, Austria

Academic Service

2025–on **Reviewer**, Advances in Neural Information Processing Systems (NeurIPS)

2025–on **Reviewer**, European Workshop on Reinforcement Learning (EWRL)

2025–on **Reviewer**, IEEE/CVF Winter Conference on Applications of Computer Vision (WACV)

2022–2023 **Reviewer**, IEEE Transactions on Neural Networks and Learning Systems (TNNLS)

Additional Publications

2024 **PAC-Bayesian Soft Actor-Critic Learning**.
Tasdighi, B; **Akgül, A.**; Haussmann, M; Brink, K.K; Kandemir, M. Advances in Approximate Bayesian Inference (AABI).
PDF adinlab/PAC4SAC

2024 **Calibrating Bayesian UNet++ for Sub-Seasonal Forecasting**.
Asan, B; **Akgül, A.**; Unal, A; Kandemir, M; Unal, G. Tackling Climate Change with Machine Learning, ICLR.
PDF

2023 **BOF-UCB: A Bayesian-Optimistic Frequentist Algorithm for Non-Stationary Contextual Bandits**.
Werge, N; **Akgül, A.**; Kandemir, M. arXiv preprint.
PDF

2022 **How to Combine Variational Bayesian Networks in Federated Learning**.
Ozer, A; Buldu, K.B; **Akgül, A.**; Unal, G. Workshop on Federated Learning: Recent Advances and New Challenges, in Conjunction with NeurIPS.
PDF ituvisionlab/BFL-P