

Burcu Sayin Günel

Applied Research Scientist | AI Engineer

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LLMs • AI Agents • Fine-Tuning • NLP • RAG • Conversational AI • MLOps • Human-AI Collaboration • Production • Technical Leadership

Summary — Applied Research Scientist and AI Engineer with 7+ years experience building machine learning and LLM-driven systems for real-world applications, currently serving as **CTO** of an early-stage AI startup. PhD (Cum Laude) in Information Engineering and Computer Science with deep expertise in large language models, conversational AI, NLP, and hybrid human-machine intelligence. Proven record of translating frontier research into production-ready, scalable solutions—owning technical strategy and architecture, leading cross-functional teams, and mentoring engineers and scientists. Delivered impact on large-scale EU-funded projects (TANGO) and authored 15+ peer-reviewed papers (250+ citations, h-index 9) at leading venues including EMNLP, NAACL, IUI, and NeurIPS.

Technical Skills

Languages & Programming: Python, Java, C, JavaScript, SQL, Bash, HTML, CSS

ML & Deep Learning: PyTorch, scikit-learn, Transformers, NumPy, Pandas, model evaluation, active learning, exp. design

LLMs & Generative AI: AI agents, fine-tuning, prompt engineering, RAG, DSPy, Langroid, conversational AI, LLM evaluation, spaCy, NLTK

MLOps & Deployment: MLflow, Docker, FastAPI, Flask, CI/CD, Git, HPC / Slurm clusters

Cloud: AWS

Leadership & Collaboration: technical strategy, product architecture, release quality & validation, cross-functional leadership, mentoring, technical writing, interdisciplinary collaboration

Spoken Languages: Turkish (Native), English (C2), Italian (B1)

Experience

Stealth AI Startup

Mar 2026 – Present

Chief Technology Officer (CTO) • Italy

- Lead the design of AI-driven technology products with a strong emphasis on methodological rigor, scalable architecture, and reliable execution.
- Own technical strategy, product architecture, testing and validation, and release quality across the full product lifecycle.
- Translate cutting-edge AI research (LLMs, agents) into practical, production-grade features and engineering best practices.
- Provide cross-functional technical leadership, aligning research, engineering, and product teams to deliver robust AI solutions.

University of Trento — Dept. of Information Engineering and Computer Science

Nov 2022 – Feb 2026

Postdoctoral Researcher

- Designed and implemented robust pipelines for hybrid human-machine intelligence, advancing reliable, trustworthy decision-support systems.
- Built LLM-driven conversational support systems within the EU-funded **TANGO** project, improving clinical decision-making workflows.
- Translated research prototypes into production-ready solutions with multidisciplinary teams, ensuring reproducibility, robustness, and real-world deployment.
- Directed independent research on LLMs and hybrid intelligence, publishing in leading venues, mentoring junior researchers, and fostering cross-disciplinary collaborations.

University of Trento — Dept. of Information Engineering and Computer Science

Nov 2018 – Sep 2022

Doctoral Researcher

- Developed evaluation metrics that improved the reliability and interpretability of hybrid human-machine classifiers, supporting trustworthy AI in decision-support applications.
- **Research Intern, Delft University of Technology (TU Delft)** — Web Information Systems Group (Apr–Jul 2021): bridged computational models with human perception to identify and characterize image atypicality.

Izmir Institute of Technology — Dept. of Computer Engineering

Jan 2016 – Sep 2018

Research & Teaching Assistant

- Conducted research on social network analysis and privacy; taught and supported courses including Operating Systems, Data Structures, Data Mining, Probability & Statistics, and Cryptography.

Early Experience (during Bachelor studies)

2013 – 2014

- **IT Consultant**, İzmir Bizim Okul Foundation (2014) — modernized the organization’s database and website and strengthened IT infrastructure.
- **Software Development Intern**, iDivino (2013) — built a JavaScript/jQuery analytics dashboard surfacing children’s learning-progress metrics for Android educational games.
- **Software Development Intern**, Sanal Yazılım (2013) — developed interactive front-end features (HTML/CSS/JS/jQuery) and co-authored a published jQuery tutorial.

Education

University of Trento — Information Engineering and Computer Science

Nov 2018 – Sep 2022

PhD in Information and Communication Technology — Cum Laude & Doctor Europaeus

- Dissertation: *Towards Reliable Hybrid Human–Machine Classifiers*.

Izmir Institute of Technology

Sep 2015 – Jan 2018

M.Sc. in Computer Engineering — CGPA 4.0/4.0

- Dissertation: *An Analysis of Information Spreading and Privacy Issues on Social Networks*.
- **Mevlana Exchange Student**, University of West Attica (2017).

Izmir Institute of Technology

Sep 2011 – Jun 2015

B.Sc. in Computer Engineering — CGPA 3.68/4.0 (Department Rank 3)

- **Erasmus Exchange Student**, Technische Hochschule Mittelhessen (Oct 2014 – Feb 2015). **Research Intern**, University of West Attica (2014): home automation and the Lab of Things.

Selected Publications

250+ citations • h-index 9 • i10-index 9. Full list on [Google Scholar](#).

- **Burcu Sayin**, et al. Towards Reliable Retrieval in RAG Systems for Large Legal Datasets. *NLLP Workshop @ EMNLP 2025*.
- **Burcu Sayin**, P. Minervini, J. Staiano, A. Passerini. Can LLMs Correct Physicians, Yet? Investigating Effective Interaction Methods in the Medical Domain. *Clinical NLP Workshop @ NAACL 2024*.
- **Burcu Sayin**, et al. MedSyn: Enhancing Diagnostics with Human–AI Collaboration. *HHAI 2025 Workshops*.
- **Burcu Sayin**, J. Yang, X. Chen, A. Passerini, F. Casati. Rethinking and Recomputing the Value of ML Models. *Artificial Intelligence Review* 58(8), 2025.
- **Burcu Sayin**, T. Zoppi, N. Marchini, F. A. Khokhar, A. Passerini. Bringing Machine Learning Classifiers Into Critical Cyber-Physical Systems: A Matter of Design. *IEEE Access* 13, 2025.
- **Burcu Sayin**, E. Krivosheev, J. Yang, A. Passerini, F. Casati. A Review and Experimental Analysis of Active Learning over Crowdsourced Data. *Artificial Intelligence Review*, 2021.
- *Recent work (2026)*: LLM-generated medical guidance for physicians, human–LLM diagnostic dialogue, and conformal hybrid decision-making (see [Google Scholar](#)).

Awards & Honors

- **Blue Sky Best Paper Award**, AAAI HCOMP 2021 — for innovative human-computation approaches that inspired new hybrid AI methodologies.
- **Methods Recognition**, ACM CSCW 2021 — for the crowdsourcing-experiment reporting checklist paper.
- **Best Paper Award**, Int. Conf. on Data Analytics 2017 (Barcelona) — “A Novel Approach to Information Spreading Models for Social Networks”.
- **Department Rank 3**, B.Sc. graduation, Izmir Institute of Technology, 2015.
- **Project Rank 3 in Competition**: Third degree with the “Colourizer” project among 184 projects in Joint Exhibition of Young Brains New Ideas Project Market and Senior Design Projects in İzmir, Turkey. 2015.