

CAGRI TEMEL

cagritemel@ieee.org | cagritemel.com | Redmond, WA, USA | IEEE Senior Member #101604066
ORCID 0009-0003-3359-6939 | [Google Scholar](https://scholar.google.com/citations?user=...) | github.com/cghtml | [linkedin.com/in/cagritemel](https://www.linkedin.com/in/cagritemel)

RESEARCH INTERESTS

Explainable and trustworthy AI; safety verification of large-language-model reasoning; auditability of autonomous decision systems; interpretable machine learning and statistical model comparison; evaluation methodology for safety claims; computer-science education.

EDUCATION

M.S., Computer Science

Sep 2023 – Apr 2025

Grand Canyon University, Phoenix, AZ, USA

GPA 3.89/4.0. Alpha Chi National College Honor Society (top 10%). Specialization in advanced machine learning and artificial intelligence.

B.S., Electrical and Electronic Engineering

Sep 2013 – Jun 2018

Istanbul Aydin University, Istanbul, Turkey

Space Studies Program

Jul 2017

International Space University

Two-month intensive interdisciplinary program, selective admission.

PUBLICATIONS

Sole authorship on all first-authored conference papers. DOIs link to the publisher version.

Peer-Reviewed Journal Articles

- [J3] S. Aksakalli, B. Giray, and **C. Temel**, “Domain-specific vs. general-purpose large language models in orthodontics: A blinded comparison of AlimGPT, GPT-4o, Gemini, and Llama,” *Dentistry Journal*, vol. 14, no. 4, art. 219, Apr. 2026. doi: 10.3390/dj14040219. (*Q1, IF 3.1, PubMed and Scopus indexed, open access; the evaluated system is deployed as OrthoAtlas, orthoatlas.ai*)
- [J2] S. Aksakalli, U. Ok, **C. Temel**, D. Sezgin Mansuroglu, and Y. M. Sahin, “The mechanical testing and performance analysis of three-dimensionally produced lingual retainers,” *Journal of the World Federation of Orthodontists*, vol. 12, no. 2, pp. 64–71, Apr. 2023. doi: 10.1016/j.ejwf.2022.12.003. (*Elsevier, Scopus indexed*)
- [J1] U. Ok, S. Aksakalli, **C. Temel**, and E. Buyukbasaran, “Non-contact fabrication of a lingual retainer during the COVID-19 pandemic: Case-control study,” *Turkiye Klinikleri Journal of Dental Sciences*, vol. 29, no. 3, pp. 476–480, 2023. doi: 10.5336/dentalsci.2022-94879.

Peer-Reviewed Conference Papers

- [C3] **C. Temel**, “Robust and uncertainty-aware remaining useful life prediction with temporal neural trees,” *IEEE International Conference on Systems, Man, and Cybernetics (SMC)*, 2026. (*accepted*)
- [C2] **C. Temel**, “CT-SAFR: Safe and interpretable Chain-of-Thought reasoning for autonomous robots: A multi-layered verification framework for trustworthy AI-driven robotic decision making,” in *2026 IEEE Conference on Artificial Intelligence (CAI)*, IEEE, May 2026, pp. 598–603. doi: 10.1109/CAI68641.2026.11536646.

[C1] **C. Temel**, “Towards trustworthy autonomous robots: An explainable AI-based decision framework,” in *SoutheastCon 2026*, IEEE, Feb. 2026, pp. 1–6. doi: 10.1109/SoutheastCon63549.2026.11476455.

Preprints

[P1] **C. Temel**, “LLM-assisted test automation: A cognitive software testing framework using generative AI,” *TechRxiv*, Nov. 2025. doi: 10.36227/techrxiv.176315879.96821044/v1.

Technical Reports (*self-published, DOI-archived, not peer-reviewed*)

[R1] **C. Temel**, U. Kavak, R. Mousali, and Y. Kurt, “Redditus AI ecosystem: A mathematically rigorous framework for intelligent real estate automation with constitutional legal AI,” *Zenodo*, technical white paper v2.2, Jan. 2026. doi: 10.5281/zenodo.18137142. (*evaluated in simulation on synthetic data*)

PATENTS

[T3] “Safety-constrained Chain-of-Thought reasoning architecture for autonomous systems,” U.S. Provisional Patent Application No. 63/975,114, filed Feb. 3, 2026. (*sole inventor, pending*)

[T2] “Methods and systems for performing a credibility assessment pertaining to a stakeholder associated with an asset,” U.S. Provisional Patent Application No. 63/819,250, filed Jun. 25, 2025. (*co-inventor, pending; applicant: Hezarfen LLC*)

[T1] “Three-dimensional dental and medical pen,” Turkish Patent No. TR 2019 22779 B, granted Nov. 21, 2022 (priority Dec. 19, 2018). (*co-inventor, granted*)

RESEARCH AND PROFESSIONAL EXPERIENCE

Co-Founder and Chief Technology Officer

Dec 2020 – present

Hezarfen LLC, Seattle, WA, USA

- Lead the technical direction of *Vardenus*, an AI-driven rental platform connecting landlords, tenants, and contractors, including an LLM and retrieval mediation module with citation-grounded, jurisdiction-aware guidance.
- Design compliance-aware safety guardrails and the cloud and MLOps infrastructure behind them; designed tokenized ownership and escrow-automation workflows that are the subject of a U.S. patent application.
- Named inventor on the credibility-assessment patent application filed by the company.
- Built and operate *OrthoAtlas* (orthoatlas.ai), a retrieval-grounded clinical assistant for orthodontics, whose underlying system was evaluated against GPT-4o, Gemini, and Llama in [J2].

Machine Learning Engineer

2025 – present

Hezarfen LLC, Seattle, WA, USA

- Build LLM systems end to end: data pipelines, training, evaluation, and inference.
- Retrieval-augmented generation with guardrails (FAISS, Pinecone); MLOps with MLflow and DVC, model registry, CI/CD, canary and A/B releases, and drift monitoring.
- Serving with FastAPI and Docker/Kubernetes, with latency and cost optimization.

Software Development Engineer in Test

2020 – 2025

Hezarfen LLC

- Test automation with Java, Selenium WebDriver, TestNG, JUnit, and Cucumber; API testing with Postman and REST Assured. This work became the empirical basis of the CogniTest framework and preprint [P1].

Maker Engineer

Jan 2019 – Sep 2020

Ozyegin University, Istanbul, Turkey

- Led maker-space initiatives and built hands-on engineering curricula; mentored 100+ students and organized community showcase events.

Quality Assurance Engineer

Jul 2018 – Jan 2019

Istanbul Aydin University, Technology Transfer Office

- Architected QA and test-automation frameworks for web-based educational platforms with video streaming and student-tracking systems.

TEACHING AND OUTREACH

Creator and sole author, ML Academy (mltraining.org)

2026 – present

Open-source interactive curriculum, English and Turkish

- 123 lessons across five tracks (foundations, classical ML, deep learning, large language models, applied AI) with 401 interactive steps, 165 custom visualizations, and 387 cited academic references.
- Pedagogy built on predicting before seeing, meeting a tool only after feeling the need for it, and proving a claim by executing the algorithm; every number in every lesson is re-derived by a verification script before release.
- All algorithm engines implemented from scratch (CART, random forests, gradient boosting, MLP with backpropagation, SVM, soft decision trees, k-means, PCA, BPE, word2vec, Elo); runs entirely in the browser with no installation and no cost to the learner.

Instructor, Data and Analytics Breakout: Explainable Neural Trees

May 2026

Washington State University

- Designed and led the hands-on half of a joint workshop: students trained an interpretable model, attacked a deployed model with sensor drift, stuck-at faults, and injected noise, then contributed pull requests to the neural-trees library. All materials public.

Cumulatively taught or mentored 500+ students across university programs, maker spaces, hackathons, and national competitions.

PROFESSIONAL SERVICE

- **Program Committee**, AAAI/ACM Conference on AI, Ethics, and Society (AIES 2026), Malmo, Sweden.
- **Organizer**, special session “Trustworthy and Explainable AI for Telepresence and Autonomous Robotic Systems,” IEEE Telepresence 2026, Bristol, UK.
- **Session Chair**, “AI and Predictive Modeling,” IEEE SoutheastCon 2026.
- **Reviewer**, IEEE International Conference on Systems, Man, and Cybernetics (SMC 2026).
- **Reviewer**, IEEE Conference on Artificial Intelligence (CAI 2026).
- **Reviewer**, IEEE Energy Conversion Congress and Exposition (ECCE 2026).
- **Program Committee / proposal reviewer**, SciPy 2026.
- **Advisory Board member** (external stakeholder), Beykent University, Faculty of Economics, 2025 – present.

JUDGING AND MENTORSHIP

- Industry Mentor, Penn × Anthropic Sprint Hackathon, University of Pennsylvania, 2025 (220+ participants, 130+ teams).
- Judge, Vibe Space at SF Tech Week, San Francisco, 2025.
- Mentor, Opportunity Hack / ASU Fall Hackathon, Tempe, AZ, 2025.
- Jury Member, ANTSPARK Pre-Incubation Program, Istanbul Kultur University, 2025.
- Local Lead and Mentor, NASA Space Apps Challenge, Istanbul, 2020 – present.
- Referee, TUBITAK Robotics Competition, Turkey, 2016 – 2017.

INVITED TALKS AND PRESENTATIONS

- Presenter, “CT-SAFR: Safe and Interpretable Chain-of-Thought Reasoning for Autonomous Robots,” IEEE CAI 2026.
- Speaker, “AI That Matters: Trust Over Power,” Louisville AI Week 2026.
- Invited Speaker, “Safe and Interpretable Chain-of-Thought Reasoning for Autonomous Robots,” IEEE New Era AI World Leaders Summit, Joint Symposium on Systems, Robotics and Aerospace, Seattle, 2025.
- Speaker and Moderator, Turkey Innovation Week, Istanbul Congress Center, 2019 (audience 510,000+); panel with NASA JPL astrophysicist Dr. Umut Yildiz.
- Speaker, Turkey Innovation Week, Istanbul Congress Center, 2017 (audience 310,000+).

OPEN-SOURCE SOFTWARE

- **neural-trees** (PyPI, MIT): scikit-learn-compatible PyTorch implementations of soft decision trees and hierarchical mixtures of experts, with 5×2cv F-test model comparison.
- **ml-academy** (MIT): the engine and content behind mltraining.org, including a verification suite that re-derives every numeric claim in the curriculum.
- **reasongate** (PyPI, Apache-2.0): a self-hostable, explainable, model-agnostic gate for LLM applications that returns an allow, flag, or block decision with a machine-readable audit record for every call.
- **ml-playground**, **cognitest-framework**, **turbofan-explainable-neural-trees**: research and teaching code accompanying [P1] and [C3].

HONORS AND AWARDS

- Global Recognition Award, Real Estate Technology, 2025 (for Vardenus, Hezarfen LLC).
- National Winner, InovaTIM AI and Robotics High-School Program, 2020; recognized by KOSGEB and the Turkish Exporters Assembly, and represented Turkey at the European Entrepreneurship Promotion Awards 2020.
- Best Space Project, Maker Faire San Francisco, 2019.
- Second Place, CanSat Competition (AAS / NASA / JPL), 2015, team leader.
- Second Place, CARDIN HeadHunter Hackathon.
- Alpha Chi National College Honor Society (top 10% of graduate students).

MEMBERSHIPS

IEEE Senior Member · IEEE Computational Intelligence Society, Senior Member · Association for the Advancement of Artificial Intelligence (AAAI) · Google Developers Group, Seattle and Bellevue · AICamp, Bellevue · International Space University Alumni Network · Alpha Chi National College Honor Society

CERTIFICATIONS

Machine Learning (MIT) · Machine Learning Professional (IBM) · Deep Learning and Neural Networks with Keras (IBM) · Generative AI with Large Language Models (AWS / DeepLearning.AI)

TECHNICAL SKILLS

Languages: Python, Java, C/C++, JavaScript, SQL. **ML:** PyTorch, scikit-learn, XGBoost, LightGBM, CatBoost; explainable AI; statistical model comparison (5×2cv F-test, McNemar). **LLM systems:** retrieval-augmented generation, vector search (FAISS, Pinecone, Qdrant), evaluation design, guardrails and red teaming.

Infrastructure: AWS (EC2, Lambda, S3, RDS), Docker, Kubernetes, MLflow, DVC, CI/CD (Jenkins, GitHub Actions). **Testing:** Selenium, TestNG, JUnit, Cucumber, TDD and BDD.

Last updated: August 2026