Çerağ Oğuztüzün

PhD Candidate · Computer Science · Cleveland, OH

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Research Interests

Precision biomedicine via graph ML & knowledge graphs, genomic language models and interpretable modeling.

Education

Case Western Reserve University   *Cleveland, OH*

Ph.D. in Computer Science   *Sep. 2021 - May 2026 (anticipated)*

- Thesis: *Towards Precision Medicine, Personalizing Foundational Semantic Models*
- Thesis proposal defended.

Bilkent University   *Ankara, Turkey*

B.S. in Computer Engineering   *Sep. 2017 - Jun. 2021*

Minor in Molecular Biology & Genetics

Experience

AMD Research and Advanced Development (RAD)   *San Jose, CA*

Research Associate   *June 2025 – Current*

- Designed OmniHub-LAW: an **MCP**-based **LLM agentic workflow** that structures **GPU/NoC/memory performance counters** and telemetry into queryable datasets for **natural-language** performance analysis and **optimization recommendations**.
- Built **generative performance modeling & simulation** for **AI workloads**; automated **ETL** from **ROCm** profilers/logs; delivered context-aware insights by hardware configuration and workload.

Center for Artificial Intelligence in Drug Discovery, Case Western Reserve University   *Cleveland, OH*

Research Assistant — *Advisor: Dr. Rong Xu*   *Sep. 2023 – Current*

- Introduced and developed **precision (patient-specific) drug repurposing**: adapt **population/foundation models** to individual **multi-omic** and **EHR** profiles via **patient-conditioned loss**, **transfer learning**, and **fine-tuning**.
- Augmented biomedical **knowledge graphs** with **causal/counterfactual** edges; trained **semi-supervised** models for **inductive link prediction** under sparse, imbalanced cohorts.
- Implemented **GraphRAG**-inspired genomic sequence modeling for **promoter–enhancer** prediction; built interpretability tools for motif/path visualization.

Foundation Medicine, Roche Group   *San Diego, CA*

R&D Machine Learning Engineer Intern   *June 2024 – Aug. 2024*

- Developed **genomic language models** and **deconvolution** methods for **minimal residual disease (MRD)** monitoring from **cfDNA**; benchmarked against classical baselines and improved robustness.

The Janssen Pharmaceutical Companies of Johnson & Johnson   *Philadelphia, PA*

R&D Machine Learning Scientist Intern   *May 2023 – Sep. 2023*

- Built **denoising** and **normalization** models for **single-cell** and **CITE-seq** data; improved background estimation and downstream analysis quality for **cell therapy** studies.

Koyuturk Lab, Case Western Reserve University   *Cleveland, OH*

Research Assistant — *Advisor: Dr. Mehmet Koyutürk*   *Sep. 2021 – Current*

- Developed **interpretable ML** for **intimate partner violence** outcomes: predicted treatment response and **recidivism risk** on **small, imbalanced datasets**; emphasize **transparency** and **fairness**.

The Experimental Drug Development Centre, A*STAR   *Singapore*

Computational Biology Intern   *Jun. 2022 – Sep. 2022*

- Built the **Target Atlas — Genetics Module**: automated **web crawling**/APIs and data integration (**Python/R**) to create an interactive **lookbook** of **protein drug targets** and properties.
- Designed and executed a **single-cell RNA-seq** analysis pipeline with **Nextflow** (QC, normalization, clustering, differential expression) for a **Lupus** study.

Seven Bridges   *Ankara, Turkey*

R&D Intern   *Aug. 2019 – Sep. 2019*

- Implemented **genomics data processing** tools for the **GRAF Suite**; improved pipeline **throughput**, **reproducibility**, and **maintainability** in production settings.

Publications

JOURNAL & CONFERENCES

- [*Submitted*] T. Kannan, C. Oguztuzun, M. Koyuturk and S. Kuppannagari, "Scaling Genomic Sequence Models to Long Context with Sparse Attention," *2025.*
- [GTAC 2026 (AMD internal)] C. Oguztuzun, J. Polo, A. Aji and G. Dasika, "OmniHub-LAW: Enabling Conversational Reasoning over ML Performance Data," *2025.*
- [*In Review*] C. Oguztuzun, Z. Gao, J. Li, M. Koyuturk and R. Xu, "Learning to Take it Personally: Precision Drug Repurposing through Patient-Specific Loss on Knowledge Graphs using Biobank Data," *2025.*
- [JBI] C. Oguztuzun, Z. Gao, H. Li and R. Xu, "KGiA: Drug repurposing through disease-aware knowledge graph augmentation," *2025.*
- [ICIBM 2025] C. Oguztuzun, Z. Gao, J. Li, M. Koyuturk and R. Xu, "Tokenvizz: GraphRAG-Inspired Tokenization Tool for Genomic Data Discovery and Visualization," *2025.*
- [AMIA 2025] C. Oguztuzun, M. Koyuturk and G. Karakurt, "Interpretable Machine Learning to Identify Risk Factors for Recidivism in Intimate Partner Violence," *2025.*
- [JFV] G. Karakurt, E. Koc, R. D'Silva, C. Oguztuzun, A. Choudhary, T. Goto, K. Gao and S. Bolen, "Systematic review on the treatment of emotional abuse victimization in women by an intimate partner," *2025.*
- [JBI] C. Oguztuzun, Z. Gao and R. Xu, "Precision Drug Repurposing (PDR): Patient-Level Modeling and Prediction combining Foundational Knowledge Graph with Biobank Data," *2024.*
- [NeurIPS 2024, AIDrugX] (Spotlight) C. Oguztuzun, Z. Gao, H. Li and R. Xu, "Leveraging Disease-Specific Topologies and Counterfactual Relationships in Knowledge Graphs for Inductive Reasoning in Drug Repurposing," *2024.*
- [JMFT] G. Karakurt, A. Baier, A. Bowling, S. Singuri, C. Oguztuzun, S. Bolen, "Systematic review and data synthesis on the treatment of sexual violence victimization by an intimate partner," *2023.*
- [AMIA 2023] C. Oguztuzun, M. Koyuturk and G. Karakurt, "Characterizing Disparities in the Treatment of Intimate Partner Violence," *AMIA 2023 Informatics Summit, 2023.*
- [Psychosocial Intervention] C. Oguztuzun, M. Koyuturk and G. Karakurt, "Systematic Investigation of Meta-Analysis Data on Treatment Effectiveness for Physical, Psychological and Sexual Intimate Partner Violence Perpetration Psychosocial Intervention," *2023.*
- [IEEE STC 2022] Z. Varner, C. Oguztuzun, and F. Long, "Neural model for generating method names from combined contexts," *IEEE 29th Annual Software Technology Conference (STC), 2022.*
- [Bioinformatics] C. Oguztuzun, P. Yasar, K. Yavuz, M. Muyan, and T. Can, "MotifGenie: a Python application for searching transcription factor binding sequences using ChIP-Seq datasets," *Bioinformatics, vol. 37, no. 22, pp. 4238–4239, 2021.*
- [Nature, Scientific Reports] P. Yasar, G. Kars, K. Yavuz, G. Ayaz, C. Oguztuzun, E. Bilgen, Z. Suvacı, O. P. Cetinkol, T. Can, and M. Muyan, "A CpG Island Promoter Drives the CXXC5 Gene Expression," *Scientific Reports, vol. 11, no. 1, 2021.*

POSTERS

- [AAAI 2026, PerFM] C. Oguztuzun♩, O. Oguztuzun♩, "Lightweight inference-time personalization for frozen knowledge graph embeddings,"
- [AAAI 2026, RSD] C. Oguztuzun♩, I. Berber♩, "Who Benefits from Alignment? Measuring Disparate Impact in RLHF with Synthetic Populations,"
- [AAAI 2026, ABC] C. Oguztuzun♩, I. Berber♩, "LLM-as-Counselor: Personality-Aware Responses to Life Stressors in Synthetic Populations,"
- [AAAI 2026, ABC] C. Oguztuzun♩, I. Berber♩, "Not All Stress Is Treated Equal: Fairness Gaps in AI Support for Everyday Problems,"
- [PiNO 2025] C. Oguztuzun♩, I. Berber♩, "Beyond Fingerprints: Glass Transition Temperature Prediction in Polymers with Interpretable Machine Learning," *Polymer Initiative of Northeast Ohio, 2025.*
- [CSHL 2023] T. Sztanka-Toth, C. Oguztuzun, N. Manyakov, T. Mansi, A. Javidi, "Multimodal Single-Cell Sequencing in Cell Therapy: Estimating Background Protein Signals to Enhance Data Normalization in CITE-Seq," *Genome Informatics 2023, Cold Spring Harbor Laboratory, 2023.*

♩Equal contribution

Service

REVIEWING

- The Faculty Search Committee of the Department of Computer Science at Case Western Reserve University, 2024
- ISMB/ECCB
- RECOMB
- Journal of Biomedical Informatics (JBI)
- IEEE/ACM Transactions on Computational Biology and Bioinformatics (TCBB)
- AMIA Annual Symposium
- Pacific Symposium on Biocomputing (PSB)
- BioData Mining

TEACHING

- CSDS459: Bioinformatics for Systems Biology · · · *2023-2024*
- CSDS600: Machine Learning and Causal Inference · · · *2023*