Ayse Berceste Dincer

bercestedincer@gmail.com | bercestedincer.github.io/ | www.linkedin.com/in/ayse-berceste-dincer/

Experience

Senior AI/ML Engineer *2025 – Present*

Insider* | *Ankara, Turkey

- Designed and launched AI-driven support and shopping agents powered by modern LLM and retrieval techniques, improving customer experience and operational efficiency across enterprise use cases.
- Built personalized shopping and support experiences through intelligent ranking, adaptive retrieval, and multi-step agent workflows, enabling more relevant and context-aware user interactions.
- Led the end-to-end development of an automated evaluation framework for AI agents, enabling continuous assessment of grounding quality, response reliability, and overall system performance.

Senior Machine Learning Engineer *2022 – 2024*

Uber Technologies* | *Seattle, WA

- Led the design and deployment of large-scale forecasting models that enhanced marketplace balance and improved key business and operational metrics.
- Built and scaled deep learning–based recommendation systems that delivered personalized experiences for drivers across diverse markets.
- Owned the full end-to-end ML lifecycle—from problem definition and data exploration to model development, deployment, monitoring, and workflow optimization within large-scale data ecosystems.
- Translated applied ML research into robust production systems while partnering closely with product, engineering, and data teams to drive measurable impact.

Research Assistant *2021 – 2022*

University of Washington* | *Seattle, WA

- Conducted research in deep learning, representation learning, and high-dimensional biomedical modeling.
- Developed unsupervised and supervised models (VAEs, adversarial autoencoders, CNNs) for denoising, transfer learning, and robust embedding learning across multi-domain datasets.
- Integrated explainable AI into pipelines; collaborated on multidisciplinary genomics/proteomics projects; mentored graduate students.

Teaching Assistant *2020 – 2022*

University of Washington* | *Seattle, WA

- Worked as a TA for graduate-level courses in Machine Learning, ML for Big Data, Computational Biology/Genomics.
- Led ML review sessions and delivered guest lectures on deep learning.

Education

University of Washington *Seattle, WA*

Ph.D. in Computer Science and Engineering *2022*

- GPA: 3.89/4.00
- Advised by William Stafford Noble & Su-In Lee
- Research focused on machine learning for biomedical data, including representation learning, high-dimensional modeling, and deep learning–based denoising and integration methods.

University of Washington *Seattle, WA*

M.S. in Computer Science and Engineering *2019*

- GPA: 3.87/4.00
- Awarded Anne Dinning-Michael Wolf Endowed First-Year Fellowship
- Highlighted Coursework: Machine Learning, Statistical Methods, Data Visualization, Computational Biology

Bilkent University *Ankara, Turkey*

B.S. in Computer Engineering *2017*

- GPA: 4.00/4.00
- Valedictorian; Ranked 1st in the School of Engineering; awarded Comprehensive Merit Fellowship

Projects

Multitask neural network-based driver incentive generation
Uber Technologies *2022 – 2024*

- Developed deep multitask neural network models to provide drivers with customized incentives.
- Took ownership to drive the project across different stages including ideation, model formulation, development and iterations, experimentation, analysis, launch, and real-life maintenance of models/data pipelines/workflows.
- Integration of the ML-based incentive generation led to a statistically significant increase in key metrics compared to the status quo with a 0.6% increase in gross bookings & 0.4% increase in total trips and the project was launched in 60+ cities.

A deep learning approach to eliminate bias in protein quantification
Noble Lab, University of Washington *2021 – 2022*

- Developed a convolutional neural network (CNN) model to predict multiplicative noise coefficients from sequences.
- Reduced protein quantification noise by 30% and outperformed alternative models.
- Published in Journal of Proteome Research | Contributed talks at MLCB 2021 & ASMS 2021 and received the best presentation award at ISMB/ECCB CompMS 2021.

Adversarial Deconfounding Autoencoder for learning robust embeddings
AIMS Lab, University of Washington *2019 – 2020*

- Developed an unsupervised deep learning approach for learning deconfounded embeddings.
- Improved cancer subtype classification (AUC of 0.81-0.93) across different data domains.
- Published in Proceedings of ECCB 2020 | Contributed talk at ISMB MLCSB 2020.

DeepProfile: Interpretable deep learning of latent variables for 18 human cancers
AIMS Lab, University of Washington *2018 – 2020*

- Increased the robustness of variational autoencoders (VAEs) by designing an ensemble learning pipeline.
- Collected and integrated gene expression measurements from 1,098 datasets and 18 cancer types.
- Improved the accuracy of 5-year patient survival prediction compared to alternative approaches in 82% of test cases.
- Published in Nature Biomedical Engineering

Explorator: Personalized travel plan recommender
Bilkent University *2016 – 2017*

- Designed and implemented a mobile application in Java for generating personalized optimal travel plans.
- Created a recommendation system by collecting and integrating data from 3 different social media platforms.
- Received Sibel Ozelci Best Senior Design Project Award at Bilkent University CS Fair 2017.

Publications and Conference Presentations

- Qiu, W., **Dincer, A. B.**, Janizek, J. D., Celik, S., Pittet, M., Naxerova, K., & Lee, S. I. (2025). Deep profiling of gene expression across 18 human cancers. *Nature Biomedical Engineering*, 9, 333–355.
- Janizek, J. D., **Dincer, A. B.**, Celik, S., Chen, H., Chen, W., Naxerova, K., & Lee, S. I. (2023). Uncovering expression signatures of synergistic drug response using an ensemble of explainable AI models. *Nature Biomedical Engineering*, 7, 811–829.
- **Dincer, A. B.**, Lu, Y. Y., Schweppe, D. K., Oh, S. & Noble, W. S. (2022). Reducing Peptide Sequence Bias in Quantitative Mass Spectrometry Data with Machine Learning. *J Proteome Res.*, 21(7), 1771-1782.
- Beebe-Wang, N., **Dincer, A. B.**, & Lee, S. I. (2022). An automatic integrative method for learning interpretable communities of biological pathways. *Nucleic Acids Research (NAR) Genomics and Bioinformatics*, 4(2), lqac044.
- Qiu, W., Chen, H., **Dincer, A. B.**, Lundberg, S., Kaeberlein, M. & Lee, S. I. (2022). IMPACT: Interpretable complex machine learning prediction of all-cause mortality. *Nature Communications Medicine*, 2(125).
- **Dincer, A. B.**, Lu, Y. Y., & Noble, W. S. (2021). Inferring peptide coefficients from quantitative mass spectrometry data. *American Society for Mass Spectrometry (ASMS).*
- **Dincer, A. B.**, Janizek, J. D., & Lee, S. I. (2020). Adversarial Deconfounding Autoencoder for learning robust gene expression embeddings. *Bioinformatics*, 36(Supplement 2), i573–i582.
- Weinberger, E., **Dincer, A. B.,** & Lee, S. I. (2020). HD-MD: Batch-effect-free embeddings of scRNA-seq data. *Machine Learning in Computational Biology (MLCB).*
- **Dincer, A. B.**, Janizek J. D., Celik, S., Hiranuma, N., Naxerova, K. & Lee, S. I. (2019). DeepProfile: Interpretable deep learning of latent variables from a compendium of expression profiles for 18 human cancers. *Machine Learning in Computational Biology (MLCB).*
- Janizek, J. D., **Dincer, A. B**., Lundberg, S., Naxerova, K. & Lee, S. I. (2019). EXPRESS: Explainable prediction of anti-cancer drug synergy. *International Conference on Machine Learning (ICML) Workshop on Computational Biology.*
- **Dincer, A. B.**, Celik, S., Hiranuma, N., & Lee, S. I. (2018). DeepProfile: Deep learning of cancer molecular profiles for precision medicine. *Joint International Conference on Machine Learning (ICML) and International Joint Conferences on Artificial Intelligence (IJCAI) Workshop on Computational Biology.*

Contributed Talks

- Machine Learning for Computational Biology (MLCB) 2021, "Inferring peptide coefficients from quantitative mass spectrometry data with deep learning."
- American Society for Mass Spectrometry (ASMS) 2021, "Inferring peptide coefficients from quantitative mass spectrometry data."
- International Conference on Intelligent Systems for Molecular Biology / European Conference on Computational Biology (ISMB/ECCB) Computational Mass Spectrometry (CompMS) 2021, "Inferring peptide coefficients from quantitative mass spectrometry data."
- University of Washington Computational Molecular Biology (CMB) Program Virtual Retreat 2020, "Deep profiling of a compendium of expression data from 18 human cancers."
- European Conference on Computational Biology (ECCB) 2020, "Adversarial Deconfounding Autoencoder for learning robust gene expression embeddings."
- International Conference on Intelligent Systems for Molecular Biology (ISMB) Machine Learning in Computational and Systems Biology (MLCSB) 2020, "Adversarial Deconfounding Autoencoder for learning robust gene expression embeddings."

Technical Skills

AI & Machine Learning: LLMs, RAG, Agentic Workflows, LangChain, Transformers, PyTorch, TensorFlow, Scikit-Learn, XGBoost
Programming & Data: Python, SQL, Pandas, NumPy, PySpark, Hive
MLOps & Cloud: Kubernetes, Docker, AWS (Lambda, S3, Bedrock), CI/CD, Git, model deployment
Data & Systems Engineering: Distributed data processing, feature engineering, pipeline orchestration, monitoring