

Ayse Berceste Dincer

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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 developing and using machine learning techniques to solve biomedical problems, including representation learning for high-dimensional data and integration of denoising methods into deep learning models
- University of Washington** *Seattle, WA*
M.S. in Computer Science and Engineering *2019*
- GPA: 3.87/4.00
 - Accepted with Anne Dinning-Michael Wolf Endowed First-Year Fellowship
 - Highlighted Coursework: Machine Learning, Statistical Methods in CS, Data Visualization, Computational Biology
- Bilkent University** *Ankara, Turkey*
B.S. in Computer Engineering *2017*
- GPA: 4.00/4.00
 - Ranked 1st in School of Engineering | Accepted with Comprehensive Fellowship

EXPERIENCE

- Senior Software Engineer** *2022 – Present*
Uber Technologies | Seattle, WA
- Adopted research engineer role encompassing research in applied ML, software engineering, and machine learning engineering
 - Focused on developing machine learning models for improving the efficiency of driver incentives
 - Managed the entire ML model workflow including experimentation, productionization, and maintenance of models/pipelines while collaborating with Applied Science, Product, and Operations teams to launch ML-integrated incentives in new cities
- Research Assistant** *2021 – 2022*
Noble Lab, University of Washington | Seattle, WA
- Advised by Prof. William Stafford Noble
 - Focused on developing deep learning models for denoising data and transfer learning
 - Led multidisciplinary collaborations with research labs from different departments/institutes to facilitate model application
- Teaching Assistant** *2020 – 2022*
University of Washington | Seattle, WA
- Worked as a TA for graduate-level Machine Learning, ML for Big Data, Computational Biology/Genomics classes
 - Held machine learning review sections for a class of 25+ students and received a student rating of 4.9/5.0
 - Taught guest lectures on deep learning and gave tutorials on implementing deep learning models
- Research Assistant** *2017 – 2020*
AIMS Lab, University of Washington | Seattle, WA
- Advised by Prof. Su-In Lee
 - Built unsupervised deep learning models for representation learning of high-dimensional biological data
 - Incorporated explainable AI techniques to machine learning pipelines to draw generalizable insights
 - Mentored junior graduate students and actively engaged in multidisciplinary collaborations

PROJECTS

- Multitask neural network-based driver incentive generation** *2022 – Present*
Uber Technologies
- 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** *2021 – 2022*
Noble Lab, University of Washington
- 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 MLCB 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
- Under review 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. (2023). A deep profile of gene expression across 18 human cancers. *Under Review in Nature Biomedical Engineering*.
- 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.”

UNDERGRADUATE EXPERIENCE

Undergraduate Researcher

Bioinformatics and Computational Genomics Group, Bilkent University | Ankara, Turkey

- Developed sequence alignment algorithms for variant detection in DNA

Autumn 2016

Software Engineering Intern

SRDC (Software Research & Development Consultancy) | Ankara, Turkey

- Collected data from medical devices and developed a mobile application for medical data monitoring

Summer 2016

Software Engineering Intern

TUBITAK Software Technologies Research Institute | Ankara, Turkey

- Developed mobile applications for tracking and tracing medical devices and cosmetic products

Summer 2015

Software Engineering Intern

TUBITAK Software Technologies Research Institute | Ankara, Turkey

- Studied web design using WordPress
- Explored software management activities focused on Agile Project Management and Test-Driven Development

Summer 2014

TECHNICAL SKILLS

Proficient: Python, Keras, TensorFlow, PyTorch, NumPy, Pandas, Matplotlib, Seaborn, Scikit-learn

Familiar: Java, R, MATLAB, C/C++, HTML/CSS, SQL, Statsmodels, PySpark, D3