Ayse Berceste Dincer

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Education

University of Washington Seattle, WA
Ph.D. in Computer Science *Expected 2022*

University of Washington Seattle, WA
M.S. in Computer Science *2019*

- GPA: 3.87/4.00
- Anne Dinning-Michael Wolf Endowed First Year Fellowship

Bilkent University Ankara, Turkey
B.S. in Computer Engineering *2017*

- GPA: 4.00/4.00 (Rank: 1st in class)
- Comprehensive Fellowship (4 years)

Research Experience

Research Assistant 2017 – Present
AIMS Lab, University of Washington *Seattle, WA*

- Advised by Prof. Su-In Lee
- Developed and applied machine learning techniques to solve biological problems with a focus on cancer and Alzheimer's disease

Undergraduate Researcher Autumn 2016
Bioinformatics and Computational Genomics Group, Bilkent University *Ankara, Turkey*

- Advised by Prof. Can Alkan
- Developed algorithms for structural variant detection in human DNA

Undergraduate Internship Experience

Summer Intern Summer 2016
SRDC (Software Research & Development Consultancy) *Ankara, Turkey*

- Developed an Android application for Medolution medical data collection and monitoring system

Summer Intern Summer 2015
TÜBİTAK Software Technologies Research Institute *Ankara, Turkey*

- Developed an Android application for ÜTS medical device and cosmetic product tracking and tracing system

Summer Intern Summer 2014
TÜBİTAK 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 Intern Summer 2014
Akgün (Medical) Software Inc. *Ankara, Turkey*

- Studied automated testing

Projects

Deep learning of interpretable modules for Alzheimer's disease 2020 – Present

- Collaborated with Prof. Sara Mostafavi from the University of Washington
- Developed a framework for learning interpretable and deconfounded expression embeddings for the aging human brain
- Investigated the associations between transcriptomic heterogeneity and Alzheimer's disease neuropathology

An integrative method for learning interpretable communities of biological pathways 2020 – Present

- Collaborated with Nicasia Beebe-Wang from the University of Washington
- Developed an integrative tool to reconcile biological pathways from different databases by revealing informative groups with distinct biological functions

Adversarial Deconfounding Autoencoder for learning robust gene expression embeddings 2019 – 2020

- Developed a novel unsupervised deep learning approach for learning deconfounded embeddings
- Published in Proceedings of ECCB 2020 | Contributed Talk at ISMB MLCSB 2020

DeepProfile: Interpretable deep learning of latent variables for 18 human cancers 2018 – Present

- Collaborated with Prof. Kamila Naxerova from Massachusetts General Hospital, Center for Systems Biology
- Developed an interpretable deep learning framework for learning gene expression embeddings
- Investigated the molecular mechanisms behind patient-level heterogeneity for 18 cancer types
- Highlighted as a spotlight talk at MLCB 2019 | ICML CompBio Workshop 2018 | Journal version in progress

Explorator: Undergraduate Senior Design Project 2016 – 2017

- Developed a platform and an Android application to generate optimal activity plans for tourists and explorers
- Received Sibel Özelçi Best Senior Design Project Award

Publications and Preprints

- **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. https://doi.org/10.1093/bioinformatics/btaa796
- 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) Conference.*
- **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) Conference.*
- **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. *International Conference on Machine Learning (ICML) Workshop on Computational Biology.*
- 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.*

Teaching Experience

Teaching Assistant Autumn 2020
University of Washington *Seattle, WA*

- Computational Biology (CSE527)

Teaching Assistant Autumn 2019
University of Washington *Seattle, WA*

- Computational Biology (CSE527)

Undergraduate Tutor and Grader Autumn 2016
Bilkent University *Ankara, Turkey*

- Introduction to Programming for Engineers (CS114)

Contributed Talks

- 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

Languages: Python, Java, C/C++, R, Matlab, HTML/CSS
Developer Tools: Jupyter Notebooks, Git, Android Studio, PyCharm, IntelliJ, Eclipse, Visual Paradigm