

# BERK A. ALPAY

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## EDUCATION

### Harvard University

2021 – Present

*Ph.D. in Systems, Synthetic, and Quantitative Biology*

NSF Graduate Research Fellowship

### University of Connecticut (UConn)

2017 – 2021

*B.S. in Computer Science, B.A. in Mathematics*

summa cum laude

Honors, STEM Scholar, University Scholar Programs

GPA: 3.99/4.00

## EXPERIENCE

### Undergraduate Researcher, Marks Lab (Harvard Medical School)

May 2020 – May 2021

- Probabilistic modeling of evolutionary constraints on nucleotides in coding regions.
- Implemented deep learning and Bayesian methods to do so, and created a computational pipeline to run and validate them.

### Undergraduate Researcher, Aguiar Lab (UConn)

Feb. 2019 – May 2021

- Modeling toxicological properties of drugs from chemical structure, in partnership with Pfizer.
- Created methods to predict gene expression from genetic variants using experimental genotype and transcriptome data. Emphasis on relaxing assumptions of linearity in variant effects.

### Research Intern at the Fritz Haber Institute of the Max Planck Society

June – July 2019

- Produced regression tree and neural network models of crystal system properties in inorganic compounds from materials databases.

### Teaching Assistant for Graduate-Level OPIM 5894: Intro. to Deep Learning

Jan. – May 2019

- Helped design the course. Created assignments, quizzes, and study guides on machine learning essentials, multilayer perceptrons, and convolutional and recurrent neural networks.

### Undergraduate Researcher, Eversource Energy Center (UConn)

Nov. 2017 – June 2020

- Developed approaches for modeling storm-caused power outages at fine temporal resolution.

## PUBLICATIONS

\*Alpay BA, \*Demetci P, Istrail S, Aguiar D. “Combinatorial and statistical prediction of gene expression from haplotype sequence.” *Bioinformatics*. 2020; 36(Supplement\_1):i194-i202. Proceedings of *ISMB 2020*.  
\*contributed equally

Alpay BA, Wanik D, Watson P, Cerrai D, Liang G, Anagnostou E. “Dynamic Modeling of Power Outages Caused by Thunderstorms.” *Forecasting*. 2020; 2(2):151-162.

## MANUSCRIPTS IN PREPARATION

Alpay BA, Dias M, Frazer J, Marks DS. “A Bayesian Mutation-Selection Model of Evolutionary Constraints on Coding Sequences.”

Alpay BA, Kulkarni A, Oviedo J, Santos S, Rodriguez P, Gosink M, Aguiar D. “A Unified Analysis of Methods for Predicting Adverse Drug Reactions.”

## TALKS

**Alpay B**, Kulkarni A, Oviedo J, Santos S, Rodriguez P, Gosink M, Aguiar D. "Predicting Drug Side Effects from Chemical Signatures." UConn Senior Design Demonstration Day. Virtual, 2021.

**Alpay BA**. "Data, Descriptors, and Models for Predicting Toxicity from Quantitative Structure-Activity Relationships." UConn CSE Department Bioinformatics Seminar. Virtual, 2020.

\***Alpay BA**, \*Demetci P, Istrail S, Aguiar D. "Combinatorial and statistical prediction of gene expression from haplotype sequence." Virtual proceedings of *ISMB 2020*; attended on an ISMB Fellowship Award.

\***Alpay BA**, \*Demetci P, Istrail S, Aguiar D. "Combinatorial and statistical prediction of gene expression from haplotype sequences." UConn CSE Department Bioinformatics Seminar, Storrs, CT. 2020.

**Alpay BA**, Wanik DW (Presenting Author), Watson PL, Cerrai D, Udeh K, Anagnostou EN. "Dynamic Representation of Storm Outages Using an LSTM Neural Network." American Geophysical Union Fall Meeting, Washington D.C. 2018.

**Alpay B**. "Dynamic Modeling of Storm Power Outages Using an LSTM Recurrent Neural Network." MIT IEEE Undergraduate Research Technology Conference, Cambridge, MA. 2018.

**Alpay B**, Anagnostou E. "Continuous Spatiotemporal Modeling of Storm Outages." UConn Holster Symposium, Storrs, CT. 2018.

## POSTERS

**Alpay BA**, Dias M, Frazer J, Weinstein EN, Marks DS. "A Probabilistic Model of RNA Constraints on Viral Evolution." Mutational Scanning Symposium. Virtual, 2021

\***Alpay BA**, \*Demetci P, Istrail S, Aguiar D. "Combinatorial and statistical prediction of gene expression from haplotype sequence." UConn Frontiers in Undergraduate Research. Virtual, 2021.

**Alpay BA**, Wanik DW, Liang G, Udeh K, Watson PL, Cerrai D, Anagnostou EN. "Streamlining Feature Representation in Thunderstorm Outage Prediction Models." UConn Fall Frontiers in Undergraduate Research, Storrs, CT. 2018.

## HONORS AND AWARDS

U.S.	NSF Graduate Research Fellowship	2021
	Barry M. Goldwater Scholarship	2019
UCONN	University Scholar (the highest honor for undergrads)	2019
	Fred J. Maryanski Memorial Scholarship for Computer Science	2019
	Dominick A. Pagano Endowed Scholarship in Computer Science & Engineering	2018
	Holster First Year Research Scholarship	2018
	STEM Academic Excellence Scholarship	2017