

Max Springer

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Department of Mathematics
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Research Interests Algorithmic Game Theory, Auction and Mechanism Design,
Fair Allocation, Combinatorics, Machine Learning

Education **University of Maryland** College Park, MD
PhD in Applied Mathematics August 2020 – Present
Advisor: Professor MohammadTaghi Hajiaghayi

Cornell University Ithaca, NY
BA in Mathematics, minor in Biological Sciences August 2015 – May 2019
Mentors: Professors Steven Strogatz, Stephen Ellner

Accepted Publications **The Pulse: Transient fMRI Signal Increases in Subcortical Arousal Systems During Transitions in Attention**
Rong Li, Jun Hwan Ryu, Peter Vincent, Max Springer, ... , Hal Blumenfeld
NeuroImage, May '21

Submitted Papers **Sparse Recovery and Feature Importance for Classification**
Kiarash Banihashem, MohammadTaghi Hajiaghayi, Max Springer*
25th International Conference on Artificial Intelligence and Statistics - March 2022

Analysis of a Learning Based Algorithm for Budget Pacing
MohammadTaghi Hajiaghayi, Max Springer*
36th AAI Conference of Artificial Intelligence - February 2022

Almost Envy-Free Allocations of Indivisible Goods and Chores with Entitlements
MohammadTaghi HajiAghayi, Max Springer, Hadi Yami*
36th AAI Conference of Artificial Intelligence - February 2022

In Preparation **Estimating Beta-Cell Function and Insulin Resistance from a Glucose-Insulin Homeostasis Model**
Max Springer, Arthur Sherman, Joon Ha

A Machine Learning Approach for Classification of Spike-Wave Discharges in Absence Epilepsy
Max Springer, Aya Khalaf, Heinz Krestel, ... , Hal Blumenfeld

* authors appear in alphabetical order

Presentations

Analysis of a Learning Based Algorithm for Budget Pacing

Facebook Operations Research Workshop - October 2021

EEG and Machine Learning in Prediction of Impaired Responses to Visual Stimuli During Interictal Epileptiform Discharges

75th American Epilepsy Society Meeting - December 2021

A Machine Learning Approach for Classification of Spike-Wave Discharges in Absence Epilepsy

74th American Epilepsy Society Meeting - December 2020

Driving Safety in Patients with Generalized SWD but no Clinical Seizures: Evaluation with a Realistic Driving Simulator

73rd American Epilepsy Society Meeting - December 2019

Research Experience

Laboratory of Biological Modeling

May 2021 – Present

National Institutes of Diabetes and Digestive Kidney Diseases (NIDDK)

Advisor: Dr. Arthur Sherman

Research focuses on analysis of dynamical systems model of Type 2 Diabetes.

Hajiaghayi Research Group

December 2020 – Present

University of Maryland (College Park), Department of Computer Science

Advisor: Professor MohammadTaghi Hajiaghayi

Research focuses on fair division problems and approximate algorithms.

Blumenfeld Lab

May 2019 – August 2020

Yale University School of Medicine, Department of Neurology

Advisor: Dr. Hal Blumenfeld

Formulated machine learning classification algorithm for epileptiform discharges from large-scale set of scalp EEG data.

Strogatz Research Group

January 2019 – May 2019

Cornell University, Department of Mathematics

Advisor: Professor Steven Strogatz

Research focused on evolutionary game theory and dynamic modeling of bacterial resistance.

Integrative Cancer Dynamics Unit

May 2018 – December 2018

National Cancer Institute, National Institutes of Health

Advisor: Dr. Orit Lavi

Worked on dynamical systems model of cell cycle and tumorigenesis.

Computational Physiology Laboratory January 2017 – January 2018
Cornell University, Department of Neurobiology and Behavior
Advisor: Professor Christiane Linster
Investigated the physiological effects and behavioral role of serotonin within the rodent olfactory bulb.

Honors and Awards Dean's Fellowship (University of Maryland) August 2020

Teaching experience **Graduate Teaching Assistant (UMD)** Spring 2021
MATH 142: Calculus II
Held twice weekly recitations for topics covered in lecture. Course topics: techniques of integration, differential functions, sequences & series, etc...
Average student rating: 4.5/5.

Graduate Teaching Assistant (UMD) Fall 2020
MATH 135: Mathematics for Life Sciences
Held twice weekly recitations for topics covered in lecture. Course topics: descriptive statistics, probability, discrete time modeling.
Average student rating: 5/5.

Course Instructor (Cornell Adult University) Summer 2017
Quantum Physics Crash Course
Designed course curriculum and taught the basic concepts of quantum physics at a high level through lectures and hands-on experiments to advanced high school students.

Services **External Reviewer**
Conferences: ESA '21, ITCS '22, AAAI '22, AISTATS '22

Skills **Programming**
Proficient in: MATLAB, Python, Java, R.

Languages: English (native), German (advanced), Italian (limited)