Max Springer

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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

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

Almost Envy-Free Allocations of Indivisible Goods and Chores with Entitlements
MohammadTaghi HajiAghayi, Max Springer, Hadi Yami
36th AAAI 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

Conference Presentations

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 tumorgenesis.

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.

Skills

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

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