# 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)