



Özgür Yüksel M.S.C.

Academic Experience

- **2022 - Present – Independent Research**
Stochastic Establishment in Evolving Networks [PDF]
Evolved GRNs to discover cooperative strategies; found establishment probability depends on fitness landscape accessibility
Drug Resistance Emergence Modeling [Link]
Applied G-function evolutionary game theory to model cancer evolution into resistant states
Adaptive Polymorphism Framework [PDF1,PDF2]
Developed modular framework for evolutionary branching analysis
Applied to *P. putida* cross-feeding; validated with agent-based model
Evolutionary Trajectory Analysis [Link1,Link2]
Modeled GRN evolution using Michaelis-Menten dynamics across parallel lineages
Introduced "Forecast Horizon" concept for evolutionary predictability
- **2018 July - 2021 Dec – Yeditepe University, Istanbul**
Biotechnology MSc - GPA (4.00)
Thesis; "Game-Theoretical Analysis of Cooperation and Cheating in Lipase-Producing *Yarrowia lipolytica* Subcultures"
Developed ODE-based population dynamics models using replicator dynamics and Monod growth kinetics to predict evolutionary outcomes in microbial systems. Implemented Stable State Finder algorithm in MATLAB to identify evolutionary equilibria under varying environmental conditions.
- **2012 Sep - 2017 Feb – Yeditepe University , Istanbul**
Genetics and Bioengineering BSc
Undergraduate Research Project:
Developed both spatial stochastic (agent-based) and non-spatial deterministic evolutionary game models for microbial population dynamics.
- **2016 Summer – GENETIKS Disease Diagnosis Center**
Internship at Molecular Genetics Laboratory

Publications & Presentations

- **Pending Publication [Preprint]**
Yuksel, O. & Nikerel, E. Game Theoretical Analysis of Cooperation and Cheating Among Lipase Producing *Candida rugosa* Sub-Cultures
- **2022 Sept - Oral Presentation at Ecology and Evolutionary Biology Symposium**
Middle East Technical University , Ankara
Yuksel, O. (2022) Game theoretical analysis of cooperation and cheating among lipase producing *Yarrowia lipolytica* sub-cultures.

Theoretical Domains

Systems Biology

Game Theory

Dynamical Systems

Eco-Evo-Devo

Technical Skills

Data Visualization

Population-level Models

Agent-Based Models

Spatially Explicit Models

Ordinary Differential Equations

Machine / Reinforcement Learning

Research Interests

Evolvability

Predictability

G-P Mapping

Evolutionary Novelty

Contact

ozguryuksel@live.com

o-yuksel.github.io

Rytergade 23B, Odense, DK

Interests

Depth Psychology

Philosophy of Mind

Competitive E-sports

(2013-2015 Riot Games)

Running / Marathons

Aikido

Certifications

Duolingo English Certificate

Advanced, Score 135

Driving License

Shodan in Aikido, Certified by
Hombu Dojo Tokyo, Japan

- **2019 June - Poster Presentation at Health Informatics and Bioinformatics Symposium**
Biomedicine and Genome Center | Izmir
Yuksel, O., & Nikerel, E. (2019) Honesty in Communication – Game Theoretical Analysis of Bacterial Signaling: Non-spatial Dynamics

- **2017 Feb - Poster Presentation at Graduation Evaluations**
Yeditepe University, Genetics and Bioengineering Program
Yuksel, O., & Nikerel, E. (2017) Game Theoretical Analysis of Bacterial Communication: Spatial Dynamics

Online Courses

- **2023 May**
Sante Fe Institute | Complexity Explorer
Dynamical Systems and Chaos

- **2022 September**
Georgia Tech | Udacity
Reinforcement Learning

- **2022 March**
Stanford | Coursera
Machine Learning