



Özgür Yüksel M.Sc.

Academic Experience

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



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[o-yuksel.github.io](https://github.com/o-yuksel)



[Ryttergade 23B, Odense, DK](#)

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.

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 I 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 I Complexity Explorer
Dynamical Systems and Chaos

2022 September

Georgia Tech I Udacity
Reinforcement Learning

2022 March

Stanford I Coursera
Machine Learning