

Yusuf Hakan Kalayci

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Education

- 2019-Present **Ph.D. Student in Computer Science**, *University of Southern California*, Los Angeles, USA.
Advisor : Shaddin Dughmi
Co-advisor : David Kempe
- 2013-2019 **B.Sc. in Computer Engineering and Mathematics with High Honors**, *Boğaziçi University*, İstanbul, Turkey.

Research Interests

Theory of **optimal stopping**, **combinatorial optimization**, and **computational social choice**, with applications to **inference-time optimization** for accurate, aligned, and efficient large language models.

Publications/Preprints (Complete list)

- In submission **Asymmetric Maximal Lotteries and a Connection to Caccetta-Haggkvist Conjecture through Metric Distortion Framework**; Fatih Erdem Kizilkaya, Yusuf Hakan Kalayci, Evi Micha, David Kempe.
- In submission **Batched Pandora's Box**; Shaddin Dughmi, Yusuf Hakan Kalayci, Vasilis Livanos, Aditya Prasad.
- In submission **Understanding Human Perception of Representation in Citizens' Assemblies: An Empirical Study**; Yusuf Hakan Kalayci, Vasilis Varsamis, Nick Gill, Evi Micha.
- In submission **LYNX: Learning Dynamic Exits for Confidence-Controlled Reasoning**; Ömer Faruk Akgül, Yusuf Hakan Kalayci, Rajgopal Kannan, Willie Neiswanger, Viktor Prasanna.
- In submission **Optimal Stopping vs Best-of-N for Inference Time Optimization**; Yusuf Hakan Kalayci, Vinod Raman, Shaddin Dughmi.
- AAMAS 2026 **Temporal panel selection in ongoing citizens' assemblies**; Yusuf Hakan Kalayci, Evi Micha; *In Proc. of 2026 Intl. Conf. on Autonomous Agents and Multiagent Systems. (to appear)*
- AAMAS 2026 **Relationships and connections between definitions of metric proportional representation**; Yusuf Hakan Kalayci, David Kempe; *In Proc. of 2026 Intl. Conf. on Autonomous Agents and Multiagent Systems. (to appear)*
- ITCS 2026 **Near-optimal sparsifiers for stochastic knapsack and assignment problems**; Shaddin Dughmi, Yusuf Hakan Kalayci, Xinyu Liu; *In Proc. of 2026 Innovations in Theoretical Computer Science.*
- AAMAS 2025 **Full Proportional Justified Representation**; Yusuf Hakan Kalayci, Jiasen Liu, David Kempe; *In Proc. of 2025 Intl. Conf. on Autonomous Agents and Multiagent Systems.*
- ALT 2025 **Is Transductive Learning Equivalent to PAC Learning?**; Shaddin Dughmi, Yusuf Hakan Kalayci, Grayson York; *In Proc. of 2025 Intl. Conf. on Algorithmic Learning Theory.*

- STOC 2024 **Limitations of Stochastic Selection Problems with Pairwise Independent Priors**; Shaddin Dughmi, Yusuf Hakan Kalayci, Neel Patel; *In Proc. of 2024 Symposium on Theory of Computing*.
- AAAI 2024 **Proportional Representation in Metric Spaces and Low-Distortion Committee Selection**; Yusuf Hakan Kalayci, David Kempe, Vikram Kher; *In Proc. of 2024 AAAI Conf. on Artificial Intelligence*.
- ICALP 2023 **On Sparsification of Stochastic Packing Problems**; Shaddin Dughmi, Yusuf Hakan Kalayci, Neel Patel; *In Proc. of 2023 EATCS Intl. Colloquium on Automata, Languages and Programming*.

Teaching Experience

University of Southern California, Teaching Assistant, Computer Science

- Spring 2025 CSCI 670 - *Advanced Analysis of Algorithms* taught by Prof. David Kempe.
- Fall 2022 CSCI 670 - *Advanced Analysis of Algorithms* taught by Prof. David Kempe.
- Fall 2021 CSCI 670 - *Advanced Analysis of Algorithms* taught by Prof. Shang-Hua Teng.

Competitive Programming, Instructor and Problem Setter

- 2013 - Present Judge and problem setter in Turkish National Olympiads in Informatics
- 2017 - 2021 Training/Building Algorithmic Competition Community at **inzva**
- Fall 2023 ACM-ICPC Trainer at University of Southern California

Boğaziçi University, Student Assistant

- Summer 2018 Math 345 - *Probability Theory*
- Fall 2017 Cmpe 250 - *Algorithms and Data Structures*

Working Experience

- Jul 2017 - Aug 2021 **Technical Lead (Voluntary)** of Competitive Programming Community at **inzva**
- Jul 2016 - Sept 2016 Business Technical Intern at **Google**, Dublin/Ireland

Awards/Honors

- 2013 **Gold Medal** in International Olympiad in Informatics (IOI), Australia
- 2013 **Gold Medal** in Balkan Olympiad in Informatics (BOI), Bosnia and Herzegovina
- 2013 **Gold Medal** in Turkish National Olympiad in Informatics
- 2012 **Bronze Medal** in Balkan Olympiad in Informatics (BOI), Serbia
- 2012 **Silver Medal** in Turkish National Olympiad in Informatics

Service

Program Committee

AAAI 2026, EC 2026

Reviewing

ICML 2026, ESA 2025, STOC 2024, STOC 2023, IPCO 2023

Mentoring

Spring 2024 - Jiasen Liu (Undergraduate Student in USC)
Present
Fall 2024 - Xinyu Liu (Master Student in USC)
Present
2020 - 2023 TUBITAK 2248 Mentoring high school students.

References

Ph.D. Shaddin Dughmi, Associate Professor of Computer Science, University of Southern California,
Advisor **shaddin@usc.edu**
Ph.D. David Kempe, Professor of Computer Science, University of Southern California,
Co-advisor **david.m.kempe@gmail.com**
Collaborator Evi Micha, Assistant Professor of Computer Science, University of Southern California,
evi.micha@usc.edu