

## STEFANOS LEONARDOS

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Current Position: **Postdoctoral Research Fellow**  
Engineering Systems & Design (ESD)  
Singapore University of Technology & Design (SUTD)

Contact Details: 8 Somapah Road, Singapore 487372  
stefanos.leonardos@sutd.edu.sg; sleonardos@outlook.de  
[[personal website](#)], [[professional website](#)], [[Google Scholar](#)]

Personal: Born in Athens, Greece, December 1981.

## EMPLOYMENT

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- 2018–21 Singapore University of Technology & Design (SUTD)**
- Postdoctoral Research Fellow
  - Project (2019–21): “A Dynamical Systems Approach to Algorithmic Game Theory”
  - Project (2018–19): “Testing Blockchain Security by Design”
- 2017–18 University of Crete (UoC)**
- Researcher: European Structural and Investment Funds
- 2014–16 University of Athens (NKUA)**
- Doctoral Researcher: Excellence II, European Social Fund for Research

## EDUCATION

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- 2017 PhD in Game Theory** University of Athens (NKUA)  
· Excellent. Advisor: C. Melolidakis
- 2012 M.Sc. in Statistics & Operations Research** University of Athens (NKUA)  
· Valedictorian 10/10
- 2009 Diplom in Mathematics** Technische Universität Darmstadt (TUD)  
· Distinction 1.0/1.0
- 2004 B.Sc. in Business Administration** Athens University of Economics & Business (AUEB)

## RESEARCH & TEACHING INTERESTS

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- Research** Game Theory: artificial intelligence, multi-agent systems, blockchains, markets, dynamics, voting  
Operations Research: pricing, oligopolies, queueing theory
- Teaching** Game Theory, Operations Research, Probability & Statistics

## SCHOLARSHIPS & AWARDS

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- 2021** · Best Paper Award: IEEE Transactions in Engineering Management (**IEEE-TEM**)  
· Best Paper Award: 35th AAAI Conference on Artificial Intelligence (**AAAI-21**)
- 2020** · Best Paper Award: 3rd Annual Decentralized Conference
- 2019** · Best Paper Award: IEEE Conference on Blockchain and Cryptocurrency (**IEEE-ICBC**)  
· Best Paper Award: Conference on Mathematical Research for Blockchain Economy (**MARBLE**)
- 2017 Greek Institution of State Scholarships (IKY)**  
· Ranked 6th in Natural Sciences: Kindly declined (due to financial reasons)
- 2013–16 Alexander S. Onassis, Public Benefit Foundation**  
· Scholarship for doctoral studies
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- 2019-20 SUTD: Outstanding Teaching Assistant Award**
- 2019 SUTD: Best Poster Award at SUTD Research Fest (Co-Author)**
- 2018 Lake Como School of Advanced Studies**  
· Summer School Fellowship “Game Theory and Voting Systems”.
- 2018 Maastricht University, Fifth EPICENTER Spring Course in Epistemic Game Theory**
- 2008–09 Socrates–Erasmus Fellowship: Darmstadt & Athens. Grade: 10/10 (24 ECTS)**  
**Scuola Matematica Interuniversitaria: Summer School Fellowship: “ $C_0$ -Semigroups”.**
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## CONFERENCE PUBLICATIONS

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- [C8] S. Leonardos, B. Monnot, D. Reijsbergen, S. Skoulakis & G. Piliouras,  
*Dynamical Analysis of the EIP-1559 Ethereum Fee Market*,  
[AFT-21] ACM conference on Advances in Financial Technologies, (2021). [[arXiv](#)]
- [C7] Y.K. Cheung, S. Leonardos & G. Piliouras  
*Learning in Markets: Greed Leads to Chaos but the Price is Right*  
[IJCAI-21] 30th International Joint Conference on Artificial Intelligence, (2021). [[arXiv](#)]
- [C6] S. Leonardos & G. Piliouras  
*Exploration-Exploitation in Multi-Agent Learning: Catastrophe Theory meets Game Theory*  
[AAAI-21] 35th AAAI Conference on Artificial Intelligence, (2021). [[arXiv](#)]  
[[Best Paper Award](#)]
- [C5] S. Leonardos, I. Sakos, C. Courcoubetis & G. Piliouras  
*Catastrophe by Design in Population Games: Destabilizing Wasteful Locked-in Technologies*  
[WINE-20] 16th Conference on Web and Internet Economics, (2020). [[arXiv](#)]
- [C4] C. Koki, S. Leonardos & G. Piliouras  
*Do Cryptocurrency Prices Camouflage Latent Economic Effects? A Bayesian Hidden Markov Approach*  
[Decentralized-19], 3rd Annual Decentralized Conference, (2019). [[DOI](#)]  
[[Best Paper Award](#)]
- [C3] N. Leonardos, S. Leonardos and G. Piliouras  
*Oceanic Games: Centralization Risks and Incentives in Blockchain Mining*  
[MARBLE-19] International Conference on Mathematical Research for Blockchain Economy, (2019). [[DOI](#)]  
[[Best Paper Award](#)]
- [C2] S. Leonardos, D. Reijsbergen, G. Piliouras  
*Weighted Voting on the Blockchain: Improving Consensus in Proof of Stake Protocols*  
[IEEE ICBC-19] IEEE International Conference on Blockchain and Cryptocurrency, (2019). [[DOI](#)]  
[[Best Paper Award](#)]
- [C1] V. Buterin, D. Reijsbergen, S. Leonardos & G. Piliouras  
*Incentives in Ethereum's Hybrid Casper Protocol*  
[IEEE ICBC-19] IEEE International Conference on Blockchain and Cryptocurrency, (2019). [[DOI](#)]

## JOURNAL PUBLICATIONS

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- [J13] C. Koki, S. Leonardos & G. Piliouras  
*Exploring the Predictability of Cryptocurrencies via Bayesian Hidden Markov Models*  
**Research in International Business and Finance**, to appear (2021). [[arXiv](#)]
- [J12] S. Leonardos, E. Petrakis, P. Skartados & G. Stamatopoulos  
*Partial Passive Ownership Holdings and Licensing*  
**Economics Letters**, (2021). [[DOI](#)].
- [J11] S. Leonardos, C. Melolidakis & C. Koki  
*Monopoly Pricing in Vertical Markets with Demand Uncertainty*  
**Annals of Operations Research**, (2021). [[DOI](#)]
- [J10] S. Leonardos, C. Melolidakis  
*On the Mean Residual Life of Cantor-Type Distributions: Properties and Economic Applications*  
**Austrian Journal of Statistics**, (2021). [[DOI](#)]
- [J9] Y. Dimitrakopoulos, A. Economou & S. Leonardos  
*Strategic Customer Behavior in a Queueing System with Alternating Information Structure*  
**European Journal of Operational Research**, (2020). [[DOI](#)]
- [J8] S. Leonardos, D. Reijsbergen, G. Piliouras  
*PREStO: A Systematic Framework for Blockchain Consensus Protocols*  
**IEEE Transactions in Engineering Management**, (2020). [[DOI](#)]  
[[Best Paper Award](#)]

- [J7] S. Leonardos & C. Melolidakis  
*On the Equilibrium Uniqueness in Cournot Competition with Demand Uncertainty*  
**The B.E. Journal of Theoretical Economics**, (2020). [DOI]
- [J6] V. Buterin, D. Reijbergen, S. Leonardos & G. Piliouras  
*Incentives in Ethereum's Hybrid Casper Protocol*  
**International Journal of Network Management**, (2020). [DOI]
- [J5] S. Leonardos, D. Reijbergen, G. Piliouras  
*Weighted Voting on the Blockchain: Improving Consensus in Proof of Stake Protocols*  
**International Journal of Network Management**, (2020). [DOI]
- [J4] C. Koki, S. Leonardos & G. Piliouras  
*Do Cryptocurrency Prices Camouflage Latent Economic Effects? A Bayesian Hidden Markov Approach*  
**Future Internet**, (2020). [DOI]
- [J3] S. Leonardos & C. Melolidakis  
*Endogenizing the Cost Parameter in Cournot Oligopoly*  
**International Game Theory Review**, to appear (2020). [DOI]
- [J2] S. Leonardos & C. Koki  
*Coalitions & Voting Power in the Greek Parliament of 2012: A Case-Study*  
**Homo Oeconomicus**, (2019). [DOI]
- [J1] S. Leonardos & C. Melolidakis  
*On the Commitment Value and Commitment Optimal Strategies in Bimatrix Games*  
**International Game Theory Review**, (2018). [DOI]

## REFEREED WORKSHOPS – BOOK CHAPTERS

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- [B6] S. Leonardos, I. Panageas, W. Overman & G. Piliouras  
*Convergence of Policy Gradient in Markov Potential Games*  
**[ICML-21] Workshop on Reinforcement Learning Theory**, (2021). [arXiv]
- [B5] Y.K. Cheung, S. Leonardos, G. Piliouras & S. Sridhar  
*Allocation of Mining Resources in the Blockchain Economy*,  
**[WINE-20] Workshop on Game Theory in Blockchain**, (2020) [abstract].
- [B4] B. Monnot, Q. Z. Hum, C.S. M. Koh, S. Leonardos & G. Piliouras  
*Ethereum's Transaction Fee Reform in EIP 1559*  
**[WINE-20] Workshop on Game Theory in Blockchain**, (2020) [abstract].
- [B3] S. Leonardos & C. Koki  
*Political Indicators in Germany & Greece: Evolving Political Systems, Distinct Paths & a Mutual Future*  
**German-Greek Yearbook of Political Economy (invited)**, Vol.3, pp:5–29, (2020). [Book]
- [B2] C. Koki, S. Leonardos & C. Melolidakis  
*Comparative Statics via Stochastic Orderings in a Two-Echelon Market with Upstream Demand Uncertainty*  
**AIRO Springer Series**, AIROSS, volume 1, p:331–343 (2019). [DOI]
- [B1] C. Koki, S. Leonardos & C. Melolidakis  
*Measuring Market Performance with Stochastic Demand: Price of Anarchy and Price of Uncertainty*  
**Belief Functions: Theory and Applications**, LNCS, volume 11069, p:163–171, (2018). [DOI]

## WORKING PAPERS

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- [W7] D. Reijbergen, B. Monnot, S. Shridhar, S. Leonardos, S. Skoulakis & G. Piliouras,  
*Transaction Fees on a Honeymoon: Ethereum's EIP-1559 One Month Later*,  
submitted to **IEEE Blockchain-2021**.
- [W6] S. Leonardos, I. Panageas, W. Overman & G. Piliouras  
*Convergence of Policy Gradient in Markov Potential Games*  
submitted to **NeurIPS-21** (reviews available). [arXiv]
- [W5] S. Leonardos, G. Piliouras & K. Spendlove  
*Exploration-Exploitation in Multi-Agent Competition: Convergence with Bounded Rationality*  
submitted to **NeurIPS-21** (reviews available). [arXiv]

- [W4] S. Leonardos & G. Piliouras  
*Exploration-Exploitation in Multi-Agent Learning: Catastrophe Theory meets Game Theory*  
journal version submitted to **Artificial Intelligence Journal (AIJ)** (invited). [[arXiv](#)]
- [W3] S. Leonardos, I. Sakos, C. Courcoubetis & G. Piliouras  
*Catastrophe by Design in Population Games: Destabilizing Wasteful Locked-in Technologies*  
journal version submitted to **Journal of Artificial Intelligence Research (JAIR)**. [[arXiv](#)]
- [W2] Y.K. Cheung, S. Leonardos & G. Piliouras  
*From Griefing to Stability in Blockchain Mining Economies*  
under submission. [[arXiv](#)], [[ethresear.ch](#)]
- [W1] S. Leonardos & C. Melolidakis  
*A Class of Distributions for Linear Demand Markets*  
under submission. [[arXiv](#)]

## SELECTED TALKS

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- 2021 **IJCAI-21**, 30th International Joint Conference on Artificial Intelligence  
**AAAI-21**, 35th AAAI Conference on Artificial Intelligence (online)  
**Athecrypt 2021**, Athens Cryptography Days (invited)  
**FOCODILE** 2nd International Workshop on Foundations of Consensus and Distributed Ledgers (invited)
- 2020 **WINE 2020**, 16th Conference on Web and Internet Economics (online)  
**ASSET 2020**, Meeting of the Association of Southern European Economic Theorists (virtual)  
**CRC 2020**, 3rd Cryptocurrency Research Conference (online)  
**FOCODILE**, part of DisCoTec 2020 (online)
- 2019 **MARBLE 2019**, International Conference on Mathematical Research on Blockchain Economy  
**University of Crete**, invited talk on “Game Theory and Blockchains”  
**Decentralized 2019**, The Premier Blockchain Conference in Europe  
**CRETE 2019**, International Conference on Research on Economic Theory and Econometrics  
**IEEE-ICBC**, IEEE International Conference on Blockchain and Cryptocurrency, Seoul, South Korea
- 2018 **CRETE2018**, International Conference on Research on Economic Theory and Econometrics  
**MCDA 2018**, 12th Multicriteria Decision Aid Meeting  
**OLIGO**, Workshop 2018 in Piraeus
- 2017 **Stony Brook**, Center for Game Theory, 28th International Conference (contributed)  
**Technion**, 9th International Conference of the Israeli Chapter, GTS  
**SDSU**, Jerome J. Lohr College of Engineering (invited)
- 2016 **GAMES 2016**, 5th World Congress of the Game Theory Society  
**GTM 2016**, 10th International Conference on Game Theory and Management  
**SING12**, 12th European Meeting on Game Theory (contributed)
- 2015 **M3ST 2015**, International Conference on Modern Mathematical Methods  
**Excellence II**, Part of the European Social Fund Research funding program

## REVIEWER SERVICES

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IEEE Transactions in Engineering Management || European Journal of Operational Research || IEEE Access || IEEE Transactions in Engineering Management || Frontiers in Blockchain || Conference on Web and Internet Economics (WINE) || Symposium on Algorithmic Game Theory (SAGT) || Applied Stochastic Models in Business and Industry

## TEACHING EXPERIENCE

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- 2020-2021 **Singapore University of Technology and Design**  
· Instructor: 40.316 Game Theory (Fast track)  
· Teaching Assistant: 40.316 Game Theory
- 2011–2017 **Arnos, Private Institute for Higher Education**  
· E-learning & Instructor: Probability, Statistics, Operations Research,  
· Dynamic Programming, Stochastic Processes, Quality Control
- 2012–2014 **University of Athens, Department of Mathematics**  
· Teaching Assistant: Game Theory, Probability I, II
- 2006–2008 **TU Darmstadt, Department of Mathematics**  
· Teaching Assistant: Functional Analysis

## COMPUTER SKILLS

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- Matlab, Python, LaTeX, Mathematica, SPSS, Minitab.
- "Algorithms, a 4-Course Specialization", by Stanford University on Coursera, 2017. Grade: 100%.
- "Design & Analysis of Algorithms", graduate course by E. Markakis (AUEB), 2018. Grade: 9.5/10.

## LANGUAGES

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**Greek** (native), **German** (Abitur 1.7), **English** (Cambridge Certificate of Proficiency in English, IELTS 8.5/9)

## CONSULTING – NON ACADEMIC

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- 2014–2015**    **TERNA Energy, GEK Terna Group**  
· Statistical analysis, Matlab in "*Eagles and Bats conservation project, Idaho, US*"
- 2009**        **EUREX Clearing AG, Gruppe Deutsche Börse**  
· Intern: Clearing Business Development
- 2009–2010**   **Military Service:** Rhodos, Greece

## OTHER

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- **Professional Bodies – Societies**  
MENSA Greece  
IEEE Transactions in Engineering Management Society  
AAAI Society  
Game Theory Society  
American Economics Association  
Hellenic Economic Chamber  
Hellenic Mathematical Society  
Alumni Association of the German School of Athens
- **Graduate Student Union, Mathematics Department**, Elected trustee (2011-2013)
- **German School of Athens**, Greek & German graduation (1999): Excellent (19.2/20).

## RECOMMENDATIONS

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**Georgios Piliouras** **Singapore University of Technology and Design**

Postdoc-Advisor · Associate Professor: Engineering Systems & Design  
· 8 Somapah Road, 487372 Singapore  
e-mail: georgios.piliouras@gmail.com

**Ioannis Panageas** **University of California, Irvine**

Co-author · Assistant Professor: Computer Science Department  
· 3019 Donald Bren Hall Irvine, CA 92697-3435  
e-mail: ipanagea@ics.uci.edu

**Yun Kuen Cheung** **Royal Holloway University of London**

Co-author · Lecturer: Computer Science  
· Egham Hill, Egham TW20 0EX, United Kingdom, Office: Bedford 1-14  
e-mail:yunkuen.cheung@rhul.ac.uk

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**Costis Melolidakis** **National and Kapodistrian University of Athens**

PhD Advisor · Associate Professor: Statistics and Operations Research  
· Panepistemioupolis, Athens 15784, Greece  
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**Antonis Economou** **National and Kapodistrian University of Athens**

PhD Committee · Professor: Statistics and Operations Research  
· Panepistemioupolis, Athens 15784, Greece  
e-mail: aeconom@math.uoa.gr

**Evangelos Markakis** **Athens University of Economics & Business**

PhD Committee · Associate Professor: Department of Informatics  
· Antoniadou & Patision 76, 10434 Athens, Greece  
e-mail: markakis@gmail.com