Alexandros A. Voudouris

School of Computer Science and Electronic Engineering, University of Essex
Colchester Campus, CO4 3SQ, UK
alexandros.voudouris@essex.ac.uk — voudourisalexandros@gmail.com
www.alexvoudouris.com

Research interests

My research interests lie at the intersection of theoretical computer science, artificial intelligence, and microeconomic theory. I am highly interested in the design of simple algorithms (mechanisms) with provable efficiency guarantees for many fundamental problems in algorithmic game theory and computational social choice.

Academic positions

- **Lecturer** (April 2020 – today)
  School of Computer Science and Electronic Engineering (CSEE), University of Essex, UK
- **Postdoctoral researcher** (October 2018 – March 2020)
  Department of Computer Science, University of Oxford, UK
  Project: Algorithms for Complex Collective Decisions on Structured Domains (ACCORD)
  (funded by the European Research Council (ERC) under grant number 639945)
  Supervisor: Edith Elkind

Education

- **Ph.D. in Computer Science and Technology** (December 2014 – September 2018)
  Department of Computer Engineering and Informatics, University of Patras, Greece
  Thesis: *Design and analysis of algorithms for non-cooperative environments*
  Advisor: Ioannis Caragiannis
- **M.Sc. in Computer Science and Technology** (September 2013 – February 2015)
  Department of Computer Engineering and Informatics, University of Patras, Greece
  Thesis: *On the efficiency of divisible resource allocation mechanisms*
  Advisor: Ioannis Caragiannis
  GPA: 9.8/10 (top 1%)
- **Diploma in Computer Engineering and Informatics** (September 2008 – July 2013)
  University of Patras, Greece
  Thesis: *Search algorithms for natural deduction proofs*
  Advisor: Stavros Cosmadakis
  GPA: 8.39/10 (best GPA in my class of approximately 250 students)

Scholarships and awards

- Ph.D. scholarship by the Alexander S. Onassis Foundation (2016 – 2018)
- Ph.D. scholarship by the Caratheodory 2013 basic research project E.114 (2014 – 2016)
- Scholarship by the Limmat Foundation (2013)

- Scholarships by the Greek State Scholarships Foundation (IKY) (2008 – 2009, 2011)

Journal paper publications

[J25] **Truthful ownership transfer with expert advice**
I. Caragiannis, A. Filos-Ratsikas, S. Nath, and A. A. Voudouris
Mathematical Programming, accepted

[J24] **The distortion of distributed metric social choice**
E. Anshelevich, A. Filos-Ratsikas, and A. A. Voudouris
Artificial Intelligence, volume 208, article 103713, 2022

[J23] **A few queries go a long way: Information-distortion tradeoffs in matching**
G. Amanatidis, G. Birmpas, A. Filos-Ratsikas, and A. A. Voudouris
Journal of Artificial Intelligence Research, volume 74, pages 227-261, 2022

[J22] **Bounding the inefficiency of compromise in opinion formation**
I. Caragiannis, P. Kanellopoulos, and A. A. Voudouris
Algorithmica, volume 84(1), pages 234–271, 2022

[J21] **Optimally deceiving a learning leader in Stackelberg games**
G. Birmpas, J. Gan, A. Hollender, F. J. Marmolejo-Cossio, N. Rajgopal, and A. A. Voudouris
Journal of Artificial Intelligence Research, volume 72, pages 507–531, 2021

[J20] **Distortion in Social Choice Problems: An annotated reading list**
E. Anshelevich, A. Filos-Ratsikas, N. Shah, and A. A. Voudouris
SIGecom Exchanges, volume 19(1), pages 12–14, 2021

[J19] **Schelling games on graphs**
A. Agarwal, E. Elkind, J. Gan, A. Igarashi, W. Suksompong, and A. A. Voudouris
Artificial Intelligence, volume 301, article 103576, 2021

[J18] **Modified Schelling games**
P. Kanellopoulos, M. Kyropoulou, and A. A. Voudouris
Theoretical Computer Science, volume 880, pages 1–19, 2021

[J17] **Welfare guarantees in Schelling segregation**
M. Bullinger, W. Suksompong, and A. A. Voudouris
Journal of Artificial Intelligence Research, volume 71, pages 143–174, 2021

[J16] **Peeking behind the ordinal curtain: Improving distortion via cardinal queries**
G. Amanatidis, G. Birmpas, A. Filos-Ratsikas, and A. A. Voudouris
Artificial Intelligence, volume 296, article 103488, 2021

[J15] **Maximum Nash welfare and other stories about EFX**
G. Amanatidis, G. Birmpas, A. Filos-Ratsikas, A. Hollender, and A. A. Voudouris
Theoretical Computer Science, volume 863, pages 69–85, 2021

[J14] **The efficiency of resource allocation mechanisms for budget-constrained users**
I. Caragiannis and A. A. Voudouris
Mathematics of Operations Research, volume 46(2), pages 503–523, 2021

[J13] **Protecting elections by recounting ballots**
E. Elkind, J. Gan, S. Obraztsova, Z. Rabinovich, and A. A. Voudouris
Artificial Intelligence, volume 290, article 103401, 2021

[J12] **Simple combinatorial auctions with budget constraints**
A. A. Voudouris
Theoretical Computer Science, volume 842, pages 6–17, 2020

[J11] **Almost envy-freeness in group resource allocation**
M. Kyropoulou, W. Suksompong, and A. A. Voudouris
Theoretical Computer Science, volume 841, pages 110–123, 2020

[J10] **How effective can simple ordinal peer grading be?**
I. Caragiannis, G. A. Krimpas, and A. A. Voudouris
ACM Transactions on Economics and Computation, volume 8, issue 3, article 16, 2020
Special issue on selected papers from EC 2016

[J9] **The distortion of distributed voting**
A. Filos-Ratsikas, E. Micha, and A. A. Voudouris
Artificial Intelligence, volume 286, article 103343, 2020

[J8] **Energy-aware tree network formation among computationally weak nodes**
A. Madhja, S. Nikoletseas, and A. A. Voudouris
Computer Networks, volume 168, article 107068, 2020

[J7] **Envy-freeness in house allocation problems**
J. Gan, W. Suksompong, and A. A. Voudouris
Mathematical Social Sciences, volume 101, pages 104–106, 2019

[J6] **Adaptive wireless power transfer in ad hoc networks**
A. Madhja, S. Nikoletseas, and A. A. Voudouris
Computer Networks, volume 152, pages 87–97, 2019

[J5] **A note on the efficiency of position mechanisms with budget constraints**
A. A. Voudouris
Information Processing Letters, volume 143, pages 28–33, 2019

[J4] **Optimizing positional scoring rules for rank aggregation**
I. Caragiannis, X. Chatzigeorgiou, G. A. Krimpas, and A. A. Voudouris
Artificial Intelligence, volume 267, pages 58–77, 2019

[J3] **Near-optimal asymmetric binary matrix partitions**
F. Abed, I. Caragiannis, and A. A. Voudouris
Algorithmica, volume 80(1), pages 48–72, 2018

[J2] **Efficiency and complexity of price competition among single-product vendors**
I. Caragiannis, X. Chatzigeorgiou, P. Kanellopoulos, G. A. Krimpas, N. Protopapas, A. A. Voudouris
Artificial Intelligence, volume 248, pages 9–25, 2017

[J1] **Welfare guarantees for proportional allocations**
I. Caragiannis and A. A. Voudouris
Theory of Computing Systems, volume 59(4), pages 581–599, 2016
Special issue on selected papers from SAGT 2014/2015

Conference paper publications

[C32] **Not all strangers are the same: The effect of tolerance in Schelling games**
P. Kanellopoulos, M. Kyropoulou, and A. A. Voudouris
47th International Symposium on Mathematical Foundations of Computer Science (MFCS), 2022

[C31] **On discrete truthful heterogeneous two-facility location**
P. Kanellopoulos, A. A. Voudouris, and Rongsen Zhang
31st International Joint Conference on Artificial Intelligence (IJCAI), 2022

[C30] **Fair division of indivisible goods: A survey**
G. Amanatidis, G. Birmpas, A. Filos-Ratsikas, and A. A. Voudouris
31st International Joint Conference on Artificial Intelligence (IJCAI), 2022

[C29] **Optimizing mixed-asset portfolios involving REITs**
F. Z. Habbab, M. Kampouridis, and A. A. Voudouris
IEEE Symposium on Computational Intelligence for Financial Engineering and Economics (CIFEr), 2022

[C28] **The metric distortion of multiwinner voting**
I. Caragiannis, N. Shah, and A. A. Voudouris
36th AAAI Conference on Artificial Intelligence (AAAI), 2022

[C27] **Heterogeneous facility location with limited resources**
Argyrios Deligkas, A. Filos-Ratsikas, and A. A. Voudouris
36th AAAI Conference on Artificial Intelligence (AAAI), 2022

[C26] **The distortion of distributed social choice**
E. Anshelevich, A. Filos-Ratsikas, and A. A. Voudouris
17th Conference on Web and Internet Economics (WINE), 2021

[C25] **Approximate mechanism design for distributed facility location**
A. Filos-Ratsikas and A. A. Voudouris
14th International Symposium on Algorithmic Game Theory (SAGT), 2021

[C24] **Distortion in social choice problems: The first 15 years and beyond** (survey)
E. Anshelevich, A. Filos-Ratsikas, N. Shah, and A. A. Voudouris
30th International Joint Conference on Artificial Intelligence (IJCAI), 2021

[C23] **A few queries go a long way: Information-distortion tradeoffs in matching**
G. Amanatidis, G. Birmpas, A. Filos-Ratsikas, and A. A. Voudouris
35th AAAI Conference on Artificial Intelligence (AAAI), 2021

[C22] **Welfare guarantees in Schelling segregation**
M. Bullinger, W. Suksompong, and A. A. Voudouris
35th AAAI Conference on Artificial Intelligence (AAAI), 2021

[C21] **Optimally deceiving a learning leader in Stackelberg games**
G. Birmpas, J. Gan, A. Hollender, F. J. Marmolejo-Cossio, N. Rajgopal, and A. A. Voudouris
34th Conference on Neural Information Processing Systems (NeurIPS), 2020

[C20] **Modified Schelling games**
P. Kanellopoulos, M. Kyropoulou, and A. A. Voudouris
13th International Symposium on Algorithmic Game Theory (SAGT), 2020

[C19] **Maximum Nash welfare and other stories about EFX**
G. Amanatidis, G. Birmpas, A. Filos-Ratsikas, A. Hollender, and A. A. Voudouris
29th International Joint Conference on Artificial Intelligence (IJCAI), 2020

[C18] **Swap stability in Schelling games on graphs**
A. Agarwal, E. Elkind, J. Gan, and A. A. Voudouris
34th AAAI Conference on Artificial Intelligence (AAAI), 2020

[C17] **Peeking behind the ordinal curtain: Improving distortion via cardinal queries**
G. Amanatidis, G. Birmpas, A. Filos-Ratsikas, and A. A. Voudouris
34th AAAI Conference on Artificial Intelligence (AAAI), 2020

[C16] **The distortion of distributed voting**
A. Filos-Ratsikas, E. Micha, and A. A. Voudouris
12th International Symposium on Algorithmic Game Theory (SAGT), 2019

[C15] **Protecting elections by recounting ballots**
E. Elkind, J. Gan, S. Obraztsova, Z. Rabinovich, and A. A. Voudouris
28th International Joint Conference on Artificial Intelligence (IJCAI), 2019

[C14] **Schelling games on graphs**
E. Elkind, J. Gan, A. Igarashi, W. Suksompong, and A. A. Voudouris
28th International Joint Conference on Artificial Intelligence (IJCAI), 2019

[C13] **Almost envy-freeness in group resource allocation**
M. Kyropoulou, W. Suksompong, and A. A. Voudouris
28th International Joint Conference on Artificial Intelligence (IJCAI), 2019

[C12] **Peer-to-peer energy-aware tree network formation**
A. Madhja, S. Nikoletseas, D. Tsolovos, and A. A. Voudouris
16th ACM International Symposium on Mobility Management and Wireless Access (MOBIWAC), 2018

[C11] **Mobility-aware, adaptive algorithms for wireless power transfer in ad hoc networks**
A. Madhja, S. Nikoletseas, and A. A. Voudouris
14th International Symposium on Algorithms and Experiments for Wireless Sensor Networks (ALGOSENSORS), 2018

[C10] **Adaptive wireless power transfer in mobile ad hoc networks**
A. Madhja, S. Nikoletseas, and A. A. Voudouris
14th International Conference on Distributed Computing in Sensor Systems (DCOSS), 2018

[C9] **The efficiency of resource allocation mechanisms for budget-constrained users**
I. Caragiannis and A. A. Voudouris
19th ACM Conference on Economics and Computation (EC), 2018

[C8] **Bounding the inefficiency of compromise**
I. Caragiannis, P. Kanellopoulos, and A. A. Voudouris
26th International Joint Conference on Artificial Intelligence (IJCAI), 2017

[C7] **Optimizing positional scoring rules for rank aggregation**
I. Caragiannis, X. Chatzigeorgiou, G. A. Krimpas, and A. A. Voudouris
31st AAAI Conference on Artificial Intelligence (AAAI), 2017

[C6] **How effective can simple ordinal peer grading be?**
I. Caragiannis, G. A. Krimpas, and A. A. Voudouris
17th ACM Conference on Economics and Computation (EC), 2016
Invited to a special issue of ACM TEAC with the best papers from EC 2016

[C5] **co-rank: an online tool for collectively deciding efficient rankings among peers**
I. Caragiannis, G. A. Krimpas, M. Panteli, and A. A. Voudouris
30th AAAI Conference on Artificial Intelligence (AAAI), 2016

[C4] **Near-optimal asymmetric binary matrix partitions**

F. Abed, I. Caragiannis, and A. A. Voudouris
40th International Symposium on Mathematical Foundations of Computer Science (MFCS), 2015

[C3] **Efficiency and complexity of price competition among single-product vendors**
I. Caragiannis, X. Chatzigeorgiou, P. Kanellopoulos, G. A. Krimpas, N. Protopapas, A. A. Voudouris
24th International Joint Conference on Artificial Intelligence (IJCAI), 2015

[C2] **Aggregating partial rankings with applications to peer grading in massive online open courses**
I. Caragiannis, G. A. Krimpas, and A. A. Voudouris
14th International Conference on Autonomous Agents and Multi-Agent Systems (AAMAS), 2015

[C1] **Welfare guarantees for proportional allocations**
I. Caragiannis and A. A. Voudouris
7th International Symposium on Algorithmic Game Theory (SAGT), 2014
Invited to a special issue of TOCS with the best papers from SAGT 2014-2015

Working papers

[W1] **Don't roll the dice, ask twice: The two-query distortion of matching problems and beyond**
G. Amanatidis, G. Birmpas, A. Filos-Ratsikas, and A. A. Voudouris

Teaching experience

School of Computer Science and Electronic Engineering, University of Essex

- Supervisor of the module *CE150: Introduction to Programming with C* (Autumn 2020-21, 2021-22)
- Supervisor of the module *CF961: Introduction to Financial Market Analysis* (Autumn 2020-21, 2021-22)
- Team supervisor for the module *CE101: Team Project Challenge* (2021-22)

Oriel College, University of Oxford

- Instructor for the course *Introduction to Algorithmic Game Theory*
(Summer school organised by CBL-international, July 2019)

Department of Computer Science, University of Oxford

- Tutor for the course *Computational Game Theory* (Michaelmas term 2018)

Department of Computer Engineering and Informatics, University of Patras

- Teaching Assistant for the course *Computational Complexity* (Spring 2014, 2018)
- Teaching Assistant for the course *Economic Theory and Algorithms* (Fall 2013 – 2017)
- Teaching Assistant for the course *Symbolic Programming Lab* (Spring 2011 – 2012)

Research-oriented student supervision

Rongsen Zhang (October 2020 – Today)

- PhD in Computational Finance, University of Essex
- Area of research: *Mechanism design without money for facility location problems*
- Co-supervised with Panagiotis Kanellopoulos

- Collaboration led to publication [C31]

Aishwarya Agarwal (June – September 2019)

- MSc in Mathematics and Foundations of Computer Science, University of Oxford
- Thesis: *Schelling segregation: A game-theoretic analysis*
- Co-supervised with Prof. Edith Elkind
- Collaboration led to publications [C18] and [J19]

Community service

- **Organizer:** 15th International Symposium on Algorithmic Game Theory (SAGT 2022; at University of Essex), Workshop on Fair Resource Allocation: Concepts, Algorithms, and Complexity (in conjunction with EC 2021), Workshop on the Distortion and Information-Efficiency Trafeoffs (in conjunction with EC 2020), Workshop on Theoretical Aspects of Fairness (in conjunction with ICALP 2019)
- **PC Chair:** SAGT 2022
- **PC member:** IJCAI (2018*, 2019, 2020), AAAI (2020, 2021, 2022), ECAI 2020, AAMAS 2020, ACM EC (2020, 2021), GAIW (2020, 2022), NeurIPS 2020, ICML 2021, IEEE CIFEr 2022, IJCAI Survey Track 2022
- **Reviewer (conferences):** AAMAS 2015, ICALP (2015, 2019), WINE (2015, 2018, 2019, 2020, 2021), SODA (2017, 2022), IJCAI 2017, ACM EC 2017, SAGT (2017, 2019, 2020, 2021), COMSOC 2018, ISAAC (2018, 2021), SIROCCO 2019, ESA 2019, TAMC 2020, MFCS 2020, ADT 2021
- **Reviewer (journals):** ACM Transactions on Economics and Computation (TEAC), Algorithmica, Artificial Intelligence (ARTINT), Discrete Applied Mathematics (DAM), Journal of Artificial Intelligence Research (JAIR), Journal of Autonomous Agents and Multi-Agent Systems (JAAMAS) Theoretical Computer Science (TCS)

Talks and presentations

Information-distortion tradeoffs in social choice and matching

- UK Economics and Computation seminar
  Online, 16 March 2022

The metric distortion of multiwinner voting

- 36*th AAAI Conference on Artificial Intelligence (AAAI)*
  Online, February 2022

Heterogeneous facility location with limited resources

- 36*th AAAI Conference on Artificial Intelligence (AAAI)*
  Online, February 2022

Approximate mechanism design for distributed facility location

- 14*th International Symposium on Algorithmic Game Theory (SAGT)*
  Aarhus University, 24 September 2021

*Recognised as a distinguished PC member.

Distortion in social choice problems: The first 15 years and beyond

- 30*th International Joint Conference on Artificial Intelligence (IJCAI)*
  Online, 25 August 2021
- AI group seminar, University of Essex
  Online, 23 February 2022

Modified Schelling games

- 13*th International Symposium on Algorithmic Game Theory (SAGT)*
  Online, 18 September 2020

The distortion of distributed voting and facility location

- *Workshop on the Distortion and Information-Efficiency Tradeoffs (DIET)*
  Online, 20 July 2020

Peeking behind the ordinal curtain: Improving distortion via cardinal queries

- AI for Decision Making seminar
  University of Essex, UK, 25 February 2020
- Algorithmic game theory at Oxford: A mini-workshop
  University of Oxford, UK, 3 September 2019

Schelling games on graphs

- Economics and Computation Seminar
  University of Liverpool, 8 July 2020
- 28*th International Joint Conference on Artificial Intelligence (IJCAI)*
  Macao, China, 16 August 2019

Truthful mechanisms for ownership transfer with expert advice

- 14*th Conference on Web and Internet Economics (WINE)*
  University of Oxford, UK, 15 December 2018 (poster and lightning talk)
- *Workshop on Opinion Aggregation, Dynamics, and Elicitation*
  Cornell University, Ithaca, New York, USA, 22 June 2018

The efficiency of resource allocation mechanisms for budget-constrained users

- *Twenty Years of the Price of Anarchy Workshop (20PoA)*
  Technical University of Crete, Chania, Greece, 3 July 2019 (poster and flash talk)
- 19*th ACM Conference on Economics and Computation (EC)*
  Cornell University, Ithaca, New York, USA, 21 June 2018
- 12*th Athens Colloquium on Algorithms and Complexity (ACAC)*
  Athens University of Economics and Business, Greece, 24 August 2017

Optimizing positional scoring rules for rank aggregation

- 31*st AAAI Conference on Artificial Intelligence (AAAI)*
  San Fransisco, California, USA, 8 February 2017

How effective can simple ordinal peer grading be?

- 17*th ACM Conference on Economics and Computation (EC)*
  Maastricht University, Netherlands, 26 July 2016
- 11*th Athens Colloquium on Algorithms and Complexity (ACAC)*
  University of Athens, Greece, 25 August 2016

co-rank: an online tool for collectively deciding efficient rankings among peers

- 30*th AAAI Conference on Artificial Intelligence (AAAI)*
  Phoenix, Arizona, USA, 14 February 2016

Near-optimal asymmetric binary matrix partitions

- 40*th International Symposium on Mathematical Foundations of Computer Science (MFCS)*
  Università degli Studi, Milano, Italy, 24 August 2015
- *First Algorithmic Game Theory Athens Workshop (AGaThA)*
  National Technical University of Athens, Greece, 27 May 2015 (invited)

Aggregating partial rankings with applications to peer grading in MOOCs

- 14*th International Conference on Autonomous Agents and Multi-Agent Systems (AAMAS)*
  Istanbul, Turkey, 8 May 2015 (poster presentation)
- 10*th Athens Colloquium on Algorithms and Complexity (ACAC)*
  National Technical University of Athens, Greece, 20 August 2015

Welfare guarantees for proportional allocations

- 7*th International Symposium on Algorithmic Game Theory (SAGT)*
  University of Patras, Greece, 2 October 2014
- 9*th Athens Colloquium on Algorithms and Complexity (ACAC)*
  National Technical University of Athens, Greece, 21 August 2014