Alexandros A. Voudouris

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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)

Publications

Journal papers

[J9] **The efficiency of resource allocation mechanisms for budget-constrained users**
I. Caragiannis and A. A. Voudouris
Mathematics of Operations Research, accepted

[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 papers

[C17] **Swap stability in Schelling games on graphs**

A. Agarwal, E. Elkind, J. Gan, and A. A. Voudouris
Proceedings of the 34th AAAI Conference on Artificial Intelligence (AAAI), 2020

[C16] **Peeking behind the ordinal curtain: Improving distortion via cardinal queries**
G. Amanatidis, G. Birmpas, A. Filos-Ratsikas, and A. A. Voudouris
Proceedings of the 34th AAAI Conference on Artificial Intelligence (AAAI), 2020

[C15] **The distortion of distributed voting**
A. Filos-Ratsikas, E. Micha, and A. A. Voudouris
Proceedings of the 12th International Symposium on Algorithmic Game Theory (SAGT), pages 312-325, 2019

[C14] **Protecting elections by recounting ballots**
E. Elkind, J. Gan, S. Obraztsova, Z. Rabinovich, and A. A. Voudouris
Proceedings of the 28th International Joint Conference on Artificial Intelligence (IJCAI), pages 259–265, 2019

[C13] **Schelling games on graphs**
E. Elkind, J. Gan, A. Igarashi, W. Suksompong, and A. A. Voudouris
Proceedings of the 28th International Joint Conference on Artificial Intelligence (IJCAI), pages 266–272, 2019

[C12] **Almost envy-freeness in group resource allocation**
M. Kyropoulou, W. Suksompong, and A. A. Voudouris
Proceedings of the 28th International Joint Conference on Artificial Intelligence (IJCAI), pages 400–406, 2019

[C11] **Peer-to-peer energy-aware tree network formation**
A. Madhja, S. Nikoletseas, D. Tsolovos, and A. A. Voudouris
Proceedings of the 16th ACM International Symposium on Mobility Management and Wireless Access (MOBIWAC), pages 1–8, 2018

[C10] **Mobility-aware, adaptive algorithms for wireless power transfer in ad hoc networks**
A. Madhja, S. Nikoletseas, and A. A. Voudouris
Proceedings of the 14th International Symposium on Algorithms and Experiments for Wireless Sensor Networks (ALGOSENSORS), pages 145–158, 2018

[C9] **The efficiency of resource allocation mechanisms for budget-constrained users**
I. Caragiannis and A. A. Voudouris
Proceedings of the 19th ACM Conference on Economics and Computation (EC), pages 681–698, 2018

[C8] **Bounding the inefficiency of compromise**
I. Caragiannis, P. Kanellopoulos, and A. A. Voudouris
Proceedings of the 26th International Joint Conference on Artificial Intelligence (IJCAI), pages 142–148, 2017

[C7] **Optimizing positional scoring rules for rank aggregation**
I. Caragiannis, X. Chatzigeorgiou, G. A. Krimpas, and A. A. Voudouris
Proceedings of the 31st AAAI Conference on Artificial Intelligence (AAAI), pages 430–436, 2017

[C6] **How effective can simple ordinal peer grading be?**
I. Caragiannis, G. A. Krimpas, and A. A. Voudouris
Proceedings of the 17th ACM Conference on Economics and Computation (EC), pages 323–340, 2016
Invited to the special issue of ACM TEAC with the best papers from EC 2016 (under review)

[C5] **co-rank: an online tool for collectively deciding efficient rankings among peers**
I. Caragiannis, G. A. Krimpas, M. Panteli, and A. A. Voudouris
Proceedings of the 30th AAAI Conference on Artificial Intelligence (AAAI), pages 4351–4352, 2016

[C4] **Near-optimal asymmetric binary matrix partitions**
F. Abed, I. Caragiannis, and A. A. Voudouris
Proceedings of the 40th International Symposium on Mathematical Foundations of Computer Science (MFCS), pages 1–13, 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
Proceedings of the 24th International Joint Conference on Artificial Intelligence (IJCAI), pages 25–31, 2015

[C2] **Aggregating partial rankings with applications to peer grading in massive online open courses**
I. Caragiannis, G. A. Krimpas, and A. A. Voudouris
Proceedings of the 14th International Conference on Autonomous Agents and Multi-Agent Systems (AAMAS), pages 675–683, 2015

[C1] **Welfare guarantees for proportional allocations**
I. Caragiannis and A. A. Voudouris
Proceedings of the 7th International Symposium on Algorithmic Game Theory (SAGT), pages 206–217, 2014

Working papers

[W2] **Maximum Nash welfare and other stories about EFX**
G. Amanatidis, G. Birmpas, A. Filos-Ratsikas, A. Hollender, and A. A. Voudouris
*arXiv:*2001.09838, January 2020

[W1] **Truthful ownership transfer with expert advice:**
Blending mechanism design with and without money
I. Caragiannis, A. Filos-Ratsikas, S. Nath, and A. A. Voudouris
*arXiv:*1802.01308, February 2020

Teaching experience

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

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

Student supervision

Aishwarya Agarwal

- MSc in Mathematics and Foundations of Computer Science, University of Oxford, September 2019
- Thesis: *Schelling segregation: A game-theoretic analysis*
- Co-supervised with Prof. Edith Elkind

Community service

- **Organizer:** WTAF (Workshop on Theoretical Aspects of Fairness, in conjunction with ICALP 2019)
- **PC member:** IJCAI (2018[*], 2019, 2020), AAAI 2020, ECAI 2020, AAMAS 2020, EC 2020, GAIW 2020
- **Reviewer (conferences):** AAMAS 2015, ICALP (2015, 2019), WINE (2015, 2018, 2019), SODA 2017, IJCAI 2017, EC 2017, SAGT (2017, 2019), COMSOC 2018, ISAAC 2018, SIROCCO 2019, ESA 2019, TAMC 2020
- **Reviewer (journals):** Artificial Intelligence, Journal of Artificial Intelligence Research, ACM Transactions on Economics and Computation, Discrete Applied Mathematics

Talks and presentations

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

- 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

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[*]Recognised as a distinguished PC member.

- 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

References

- Ioannis Caragiannis
  Associate Professor, University of Patras, Greece
  Email: caragian@ceid.upatras.gr

- Edith Elkind
  Professor, University of Oxford, UK
  Email: edith.elkind@cs.ox.ac.uk

- Sotiris Nikoletseas
  Professor, University of Patras, Greece
  Email: nikole@cti.gr