

Oskar Skibski

last update: *June 28, 2018*

Personal

Address: Banacha 2, 02-097 Warszawa, Poland (room: 1550)
Contact: oskar.skibski@mimuw.edu.pl | +48 225544155 | <http://mimuw.edu.pl/~oski>
Other: 07.07.1987, Szczecin (birth) | Married (wife: Milena) | Nationality: Polish

Employment

X 2016 – *present* **Assistant Professor** (pl: *adiunkt naukowy*) at University of Warsaw, PL
X 2015 – IX 2016 **Teaching Assistant** (pl: *asystent*) at University of Warsaw, PL
X 2014 – IX 2015 **Assistant Professor** at Kyushu University, Fukuoka, Japan
VII 2014 – IX 2014 **Postdoctoral Fellow** at Kyushu University, Fukuoka, Japan

Education

2010 – 2014 **PhD in Computer Science** | University of Warsaw
Thesis: *Shapley Value for Games with Externalities and Games on Graphs*
Supervisors: Andrzej Szalas, Tomasz Michalak
2005 – 2010 **Master of Science in Computer Science** | University of Warsaw
Thesis: *Computing the Shapley Value Extended to Coalitional Games with Externalities* | Supervisors: Andrzej Szalas, Tomasz Michalak

Awards & Honors

- 2018 – **Visiting Professor** at Université Paris-Dauphine.
- 2018 – **Invited Talk at the IX Training Conference of Police Crime Intelligence Division**, Hel, 24-27.04.2018.
- 2017 – **Invited Talk at Talk'n'Roll**, Kraków, 26.09.2017. (*selected best talk by the audience*)
- 2017 – **Invited Talk at TEDxWarsaw**, Warszawa, 23.03.2017.
- 2016 – **HOMING grant** from the Foundation for Polish Science. (more below)
- 2016 – **SONATA grant** from the National Science Centre, Poland. (more below)
- 2015 – **Special Jury Award for the Best Theoretical PhD Dissertation** from Polish Artificial Intelligence Society.
- 2014 – **Scholarship from the Office of the Marshal of the Mazovia Region**.
- 2014 – **Best students' rating** for Discrete Mathematics class in year 2013/14 out of 200 classes at the department (average score 7.0/7.0).

- 2013 – **Best students' rating** for Databases laboratory in year 2012/13 out of 87 laboratories at the department (average score 6.9/7.0).

Committees

- **Program Committee Member:**
 - **AAAI-19** – 33rd AAAI Conference on Artificial Intelligence,
 - **IJCAI-18** – 27th International Joint Conference on Artificial Intelligence,
 - **AAAI-18** – 32nd AAAI Conference on Artificial Intelligence,
 - **IJCAI-17** – 26th International Joint Conference on Artificial Intelligence,
 - **AAAI-17** – 31st AAAI Conference on Artificial Intelligence,
 - **IJCAI-16** – 25th International Joint Conference on Artificial Intelligence,
 - **AAMAS-16** – 15th Int. Conference on Autonomous Agents and Multiagent Systems,
 - **AAAI-16** – 30th AAAI Conference on Artificial Intelligence,
 - **IJCAI-15** – 24th International Joint Conference on Artificial Intelligence,
 - **AAMAS-15** – 14th Int. Conference on Autonomous Agents and Multiagent Systems,
 - **AAAI-15** – 29th AAAI Conference on Artificial Intelligence,
 - **AAAI-14** – 28th AAAI Conference on Artificial Intelligence.
- **Co-organizer:**
 - Forum Informatyki Teoretycznej (FIT-17), **Warsaw, Poland**, 2017.
 - 3rd International Workshop on Market Design Technologies for Sustainable Development, **Yokohama, Japan**, 2015.
 - IJCAI-15 Workshop on Innovative Applications of Game Theory and Market Design, **Buenos Aires, Argentina**, 2015.
 - 2nd International Workshop on Market Design Technologies for Sustainable Development, **Yokohama, Japan**, 2014.
- **Reviewer:** (updated on January 1)
 - Artificial Intelligence,
 - Autonomous Agents and Multi-Agent Systems,
 - European Journal of Operational Research,
 - Fundamenta Informaticae,
 - IEEE Intelligent Systems,
 - IEEE Transactions on Fuzzy Systems,
 - Information Sciences,
 - International Journal of Approximate Reasoning,
 - International Journal of Applied Mathematics and Computer Science,
 - Theory and Decision,
 - Conferences: AAMAS-13, AAAI-13, AAMAS-11.

Grants

- 2016 – 2018 **Centrality Measures: from Theory to Applications** (Principal Investigator)
Foundation for Polish Science | HOMING (2016-1/7)
Other members: Jadwiga Sosnowska, Tomasz Wąs (PhD Students)
Amount of funding: 796 260 PLN
- 2016 – 2019 **Computational Analysis of Applied Weighted Voting Games** (Principal Investigator) | National Science Centre | SONATA (2015/19/D/ST6/03113)
Other members: Tomasz P. Michalak (Co-investigator)
Amount of funding: 217 320 PLN

Publications

Journal papers:

1. O.Skibski, T.Rahwan, T.Michalak, M.Wooldridge. *Enumerating Connected Subgraphs and Computing the Myerson and Shapley Values in Graph-restricted Games*. *ACM Transactions on Intelligent Systems and Technology*, (to appear), 2018.
2. O.Skibski, T.Michalak, T.Rahwan. *Axiomatic Characterization of Game-Theoretic Centrality*. *Journal of Artificial Intelligence Research* 62, pp. 33–68, 2018.
3. O.Skibski, T.Michalak, M.Wooldridge. *The Stochastic Shapley Value for Coalitional Games with Externalities*. *Games and Economic Behavior* 108, pp. 65–80, 2018.
4. O.Skibski, M.Yokoo. *An Algorithm for the Myerson Value in Probabilistic Graphs with an Application to Weighted Voting*. *IEEE Intelligent Systems* 32(1), pp. 32–39, 2017.
5. T.Michalak, T.Rahwan, O.Skibski, M.Wooldridge. *Defeating Terrorist Networks with Game Theory*. *IEEE Intelligent Systems* 30(1), pp. 53–61, 2015.
6. T.Michalak, T.Rahwan, S.Moretti, R.Narayanam, O.Skibski, P.Szczepański, M.Wooldridge. *A New Approach to Measure Social Capital using Game-Theoretic Techniques*. *ACM SIGecom Exchanges*, pp. 95–100, 2015.

Conference papers:

1. J.Sosnowska, O.Skibski. *Path Evaluation and Centralities in Weighted Graphs – An Axiomatic Approach*. *Proceedings of the 27th International Joint Conference on Artificial Intelligence (IJCAI-18)*, (to appear), 2018.
2. T.Wąs, O.Skibski. *Axiomatization of the PageRank Centrality*, *Proceedings of the 27th International Joint Conference on Artificial Intelligence (IJCAI-18)*. (to appear), 2018.
3. O.Skibski, J.Sosnowska. *Axioms for Distance-Based Centralities*. *Proceedings of the 32nd AAAI Conference on Artificial Intelligence (AAAI-18)*, pp. 1218–1225, 2018.
4. T.Wąs, O.Skibski. *An Axiomatization of the Eigenvector and Katz Centralities*. *Proceedings of the 32nd AAAI Conference on Artificial Intelligence (AAAI-18)*, pp. 1258–1265, 2018.
5. J.Sosnowska, O.Skibski. *Attachment Centrality for Weighted Graphs*. *Proceedings of the 26th International Joint Conference on Artificial Intelligence (IJCAI-17)*, pp. 416–422, 2017.
6. O.Skibski, T.Michalak, T.Rahwan. *Axiomatic Characterization of Game-Theoretic Network Centralities*. *Proceedings of the 31st AAAI Conference on Artificial Intelligence (AAAI-17)*, pp. 698–705, 2017.

7. O.Skibski, T.Rahwan, T.Michalak, M.Yokoo. *Attachment Centrality: An Axiomatic Approach to Connectivity in Networks*. *Proceedings of the 15th International Conference on Autonomous Agents and Multiagent Systems (AAMAS-16)*, pp. 168–176, 2016.
8. O.Skibski, S.Matejczyk, T.Michalak, M.Wooldridge, M.Yokoo. *k-Coalitional Cooperative Games*. *Proceedings of the 15th International Conference on Autonomous Agents and Multiagent Systems (AAMAS-16)*, pp. 177–185, 2016.
9. O.Skibski, T.Michalak, Y.Sakurai, M.Yokoo. *A Pseudo-Polynomial Algorithm for Computing Power Indices in Graph-Restricted Weighted Voting Games*. *Proceedings of the 24th International Joint Conference on Artificial Intelligence (IJCAI-15)*, pp. 631–637, 2015.
10. O.Skibski, T.Michalak, Y.Sakurai, M.Wooldridge, M.Yokoo. *A Graphical Representation for Games in Partition Function Form*. *Proceedings of the 29th AAAI Conference on Artificial Intelligence (AAAI-15)*, pp. 1036–1042, 2015.
11. R.Narayanam, O.Skibski, H.Lamba, T.Michalak. *A Shapley Value-based Approach to Determine Gatekeepers in Social Networks with Applications*. *Proceedings of the 21st European Conference on Artificial Intelligence (ECAI-14)*, pp. 651–656, 2014.
12. O.Skibski, T.Michalak, T.Rahwan, M.Wooldridge. *Algorithms for the Shapley and Myerson Values in Graph-restricted Games*. *Proceedings of the 13th International Conference on Autonomous Agents and Multiagent Systems (AAMAS-14)*, pp. 197–204, 2014.
13. T.Michalak, T.Rahwan, P.Szczepański, O.Skibski, R.Narayanam, M.Wooldridge, N.Jennings. *Computational Analysis of Connectivity Games with Applications to Terrorist Networks*. *Proceedings of the 22nd International Joint Conference on Artificial Intelligence (IJCAI-13)*, pp. 293–301, 2013.
14. O.Skibski. *Steady Marginality: A Uniform Approach to Shapley Value for Games with Externalities*. *Proceedings of the 4th Symposium on Algorithmic Game Theory (SAGT-11)*, LNCS 6982, pp. 130–142, Springer-Verlag, 2011.

Popular science

- *Czy matematyka może zlikwidować sieci terrorystyczne?*, Festiwal Nauki, 27.09.2017
- *Connecting the dots*, Talk'n'Roll, 26.09.2017
- *O tym, co łączy koty w czapkach z sieciami terrorystycznymi*, Dzień Inspiracji w Staszycu, 21.06.2017
- *Kropka w kropkę*, TEDxWarsaw, 23.03.2017
- Article: *Rozbijanie sieci terrorystycznych za pomocą teorii gier*, Delta 11/2016

Teaching

Classes at the Faculty of Mathematics, Informatics and Mechanics, University of Warsaw:

- 2017/18 | **Discrete Mathematics** class, 60h
- 2016/17 | **Discrete Mathematics** class, 60h (students' rating in a scale 1-7: 6.5)
- 2015/16 | **Databases** laboratory, 30h (sr: 6.9)
- 2015/16 | **Algorithmic Coalitional Game Theory** classes, 60h (sr: 6.8)

- 2015/16 | [Introductory Programming](#) class, 60h (sr: 6.9)
- 2015/16 | [Introductory Programming](#) laboratory, 30h (sr: 6.9)
- 2015/16 | [Game-theoretic Approach to Social Network Analysis](#) class, 30h (sr: 6.5)
- 2013/14 | [Databases](#) laboratory, 30h (sr: 6.7)
- 2013/14 | [Discrete Mathematics](#) class, 45h (sr: 7.0)
- 2013/14 | [Algorithmic Coalitional Game Theory](#) class, 30h (sr: 6.5)
- 2012/13 | [Databases](#) laboratory, 30h (sr: 6.9)
- 2012/13 | [Algorithmic Coalitional Game Theory](#) class, 30h (sr: 6.3)
- 2011/12 | [Databases](#) laboratory, 30h (sr: 6.2)
- 2011/12 | [Discrete Mathematics](#) class, 45h (sr: 6.1)
- 2010/11 | [Databases](#) laboratory, 30h (sr: 6.3)
- 2010/11 | [Discrete Mathematics](#) class, 45h (sr: 5.2)