Marek Sokołowski

University of Warsaw
Faculty of Mathematics, Informatics and Mechanics
ul. Banacha 2
02-097 Warszawa
Poland

e-mail: marek.sokolowski@mimuw.edu.pl
webpage: https://mimuw.edu.pl/~ms360974

Born: May 16, 1996 in Kolno, Poland

Education

2020–now	PhD student, Doctoral School of Exact and Natural Sciences, University of Warsaw
	Advisor: Michał Pilipczuk. Project: *Efficient static and dynamic algorithms in structural graph theory*
	Expected graduation: fall 2024
2017–2020	MSc student, Institute of Informatics, University of Warsaw
	Advisor: Michał Pilipczuk. Thesis: *Bounds on semi-ladder orders in sparse graph classes*
2014–2017	BSc student, Institute of Informatics, University of Warsaw
	Advisor: Konrad Durnoga. Thesis: *Static program analysis in Clang*

Academic interests

Graph theory • Dynamic algorithms • Parameterized algorithms • Sparse graphs

Awards

Best Student Paper

2021	ESA 2021 Best Student Paper Award for the paper *Determining 4-Edge-Connected Components in Linear Time*, coauthored with Wojciech Nadara, Mateusz Radecki, and Marcin Smulewicz

Master Thesis Awards

All awards below awarded for the MSc thesis *Bounds on semi-ladder orders in sparse graph classes.*

2021	Ex aequo winner of the 64th edition of Józef Marcinkiewicz Award for the best student paper in the field of mathematics; organized by the Polish Mathematical Society
2021	Third prize in the 37th edition of Polish Information Processing Society Award for the best computer science Master thesis
2021	Honorable mention in the 5th edition of *Krok w przyszłość* award for the best student paper in the field of mathematics; organized by the mBank Foundation

Publications

2024	T. Korhonen, M. Sokołowski
	Almost-linear time parameterized algorithm for rankwidth via dynamic rankwidth
	accepted to STOC 2024
2024	J. Gajarský, Mi. Pilipczuk, Sz. Toruńczyk, G. Stamoulis, M. Sokołowski
	Elementary first-order model checking for sparse graphs
	under submission

2024
T. Korhonen, W. Nadara, Mi. Pilipczuk, M. Sokołowski
Fully Dynamic Approximation Schemes on Planar and Apex-Minor-Free Graphs
Symposium on Discrete Algorithms (SODA 2024)

2024
A. Karczmarz, W. Nadara, M. Sokołowski
Exact Shortest Paths with Rational Weights on the Word RAM
Symposium on Discrete Algorithms (SODA 2024)

2024
Ł. Kowalik, A. Lassota, K. Majewski, Mi. Pilipczuk, M. Sokołowski
Detecting Points in Integer Cones of Polytopes is Double-Exponentially Hard
Symposium on Simplicity in Algorithms (SOSA 2024)

2023
T. Korhonen, K. Majewski, W. Nadara, Mi. Pilipczuk, M. Sokołowski
Dynamic Treewidth
Symposium on Foundations of Computer Science (FOCS 2023)

2023
Mi. Pilipczuk, M. Sokołowski
Graphs of Bounded Twin-Width are Quasi-Polynomially χ-bounded
J. Comb. Theory, Ser. B

2023
B. Bergougnoux, J. Gajarský, G. Guśpiel, P. Hliněný, F. Pokrývka, M. Sokołowski
Sparse Graphs of Twin-Width 2 Have Bounded Tree-Width
International Symposium on Algorithms and Computation (ISAAC 2023)

2023
J. Gajarský, N. Mählmann, R. McCarty, P. Ohlmann, Mi. Pilipczuk, W. Przybyszewski, S. Siebertz, M. Sokołowski, Sz. Toruńczyk
Flipper Games for Monadically Stable Graph Classes
International Colloquium on Automata, Languages and Programming (ICALP 2023)

2023
M. Hatzel, K. Majewski, Mi. Pilipczuk, M. Sokołowski
Simpler and Faster Algorithms for Detours in Planar Digraphs
Symposium on Simplicity in Algorithms (SOSA 2023)

2023
M. Sokołowski
Bounds on Half Graph Orders in Powers of Sparse Graphs
Electron. J. Comb.
extended abstract presented at EUROCOMB 2021

2023
K. Majewski, Mi. Pilipczuk, M. Sokołowski
Maintaining CMSO_2 Properties on Dynamic Structures With Bounded Feedback Vertex Number
International Symposium on Theoretical Aspects of Computer Science (STACS 2023)

2022
K. Majewski, T. Masařík, J. Novotná, K. Okrasa, Ma. Pilipczuk, P. Rzążewski, M. Sokołowski
Max Weight Independent Set in Graphs With No Long Claws: An Analog of the Gyárfás' Path Argument
International Colloquium on Automata, Languages, and Programming (ICALP 2022)

2022
Mi. Pilipczuk, A. Zych-Pawlewicz, M. Sokołowski
Compact Representation for Matrices of Bounded Twin-Width
International Symposium on Theoretical Aspects of Computer Science (STACS 2022)

2021
W. Nadara, M. Radecki, M. Smulewicz, M. Sokołowski
Determining 4-Edge-Connected Components in Linear Time
Annual European Symposium on Algorithms (ESA 2021) best student paper

Talks

Invited and seminar talks

Jun 2023	Talk *Compact Representation for Matrices of Bounded Twin-Width* at twin-width mini-symposium at FPT Fest 2023 in the Honour of Mike Fellows (Bergen, Norway)
May 2023	Invited talk *Mixed Minors, Compact Representations, and χ-Boundedness* at 1st Workshop on Twin-Width (Aussois, France)
Apr 2023	Seminar talk *Simpler and Faster Algorithms for Detours in Planar Digraphs* at Algorithms seminar in Bergen (Bergen, Norway)
Jun 2022	Invited talk *Graphs of Bounded Twin-Width Are Quasi-Polynomially χ-Bounded* at Structural Graph Theory Workshop (Gułtowy, Poland)
Mar 2022	Seminar talk *Graphs of Bounded Twin-Width Are Quasi-Polynomially χ-Bounded* at Jagiellonian TCS Seminar (Kraków, Poland)
Jan 2022	Seminar talk *Graphs of Bounded Twin-Width Are Quasi-Polynomially χ-Bounded* at Bordeaux graph theory seminar (online)

Contributed talks

Jan 2024	*Approximation Schemes on Planar and Apex-Minor-Free Graphs* at SODA 2024 (Alexandria, USA)
Jan 2024	*Detecting Points in Integer Cones of Polytopes is Double-Exponentially Hard* at SOSA 2024 (Alexandria, USA)
Mar 2022	*Compact Representation for Matrices of Bounded Twin-Width* at STACS 2022 (online)
Sep 2021	*Bounds on Half-Graph Orders in Powers of Sparse Graphs* at EUROCOMB 2021 (online)

Competition achievements

Username `mnbvmar` in most sports programming websites: [[Codeforces]], [[AtCoder]], [[Topcoder]]

2023	12th place at 2022 AtCoder World Tour finals (Tokyo, Japan)
2022	5th place at Google Code Jam finals (online)
2022	3rd place at Meta Hacker Cup finals (online)
2021	10th place at Meta Hacker Cup finals (online)
2019	3rd place at Topcoder Open Algorithm finals (Houston, USA)
2019	4th place at Google Code Jam finals (San Francisco, USA)
2018	2nd place (gold medal) at ICPC World Finals (Rapid City, USA)
2017	5th place (silver medal) at ICPC World Finals (Phuket, Thailand)
2016	6th place at Google Code Jam finals (New York, USA)
2015	21st place at Facebook Hacker Cup finals (Menlo Park, USA)
2013	Bronze medal at the International Mathematical Olympiad (Santa Marta, Colombia)

Educational experience

2022–now	Coordination of the Algorithms research seminar at University of Warsaw (with Michał Pilipczuk) Seminar website: [[link]]

Courses taught (selection)

2022/2023	*Selected topics in graph theory*, summer semester, tutorial group
2021/2022	*Sparsity*, summer semester, tutorial group
2021/2022	*Operating systems*, summer semester, lab group
2020/2021	*Computational complexity*, winter semester, tutorial group
2019/2020	*Languages, automata and computations*, summer semester, tutorial group

Sports programming organization

2014–now — **Jury member of Polish Olympiad in Informatics**
Since 2022, also a member of the Task Committee responsible for task selection for the olympiad
Also authored some problems: e.g. [[Bytemon collector]], [[Social network]], [[Nim with a twist]]

2017, 2019–21 — **Jury member of Algorithmic Engagements**
Inventing tasks for the largest Polish open sports programming contest. Jury lead in 2017

2019–2023 — **Coach of ICPC teams at the University of Warsaw**
Creating and running ICPC training sessions for teams preparing for sports programming competitions
Our teams took 1st & 2nd place in Central European Programming Contest (CERC) 2019,
4th at CERC 2020 and 2021, and 2nd at CERC 2022
Our teams qualified for World Finals 2020 (Moscow, Russia), 2021 (Dhaka, Bangladesh),
2022 & 2023 (Luxor, Egypt)

2020 — **Polish task translator at International Olympiad in Informatics (Singapore → online)**

2020 — **Polish team leader at Baltic Olympiad in Informatics (Latvia → online/Polish local site)**

2015, 2016 — **Coach at the Polish Olympiad in Informatics camp**