# Jan Olkowski

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## Scientific expertise

[1] consensus, Byzantine Agreement, distributed and parallel computing
[2] algorithms, complexity, average-case complexity of the SAT problem
[3] optimization, convex optimization, random processes

## Education

**Ph.D. in Computer Science** **Aug. 2021 - Dec. 2024**
University of Maryland, MD, USA, *GPA 3.81 / 4;*
**Important coursework:** Natural Language Processing, Parallel Computing, Advanced Numerical Optimization

**B.Sc. in Mathematics** **Oct. 2017 - Jul. 2021**
University of Warsaw, Poland*, GPA 4.72 / 5;*
**Important coursework:** Advanced Probability Theory, Multivariate Calculus, Statistic, Advanced Linear Algebra, **|** Advanced Algorithms, Databases, Computer Networks, Operating Systems

## Research and work experience

**Graduate Researcher, UMD & ARLIS & NASA,** **Jan. 2023 - present**
University of Maryland, MD, USA

- Increased exponentially the number of solutions undetectable in the SAT problem for statistical solvers.

**Graduate Researcher, Theoretical Computer Science Lab** **Aug. 2021 - present**
University of Maryland, MD, USA

- Reduced linearly the communication complexity of Consensus (STOC'22). Gave entropy-optimal characterization of Consensus solutions. Now, applying Markov chains to improve implementations of the decentralized fault-tolerant random coin.
- Presented first posted-prices implementation of any Bayesian online optimization problem (SODA'24). Introduced the study on buy-and-sell prophet inequalities (EC'23).

**Visiting Undergraduate Researcher** **Sep. 2019, Feb. 2020**
hosted by D. Kowalski, Bogdan Chlebus, Augusta University, GA, USA

- Improved algorithms for Byzantine Agreement in arbitrary networks by linear factor (DISC'20).

## Research papers

1. *Power of Posted-price Mechanisms for Prophet Inequalities*
   (K. Banihashem, M. Hajiaghayi, D. Kowalski, P. Krysta, **J. O.**)*,* **SODA 2024.**
2. *Trading Prophets*
   (J. Correa, A. Cristi, P. Duetting, M. Hajiaghayi, **J. O.**, K. Schewior), **EC 2023**.
3. *BA: Improved Consensus in Quantum Networks*
   *(*M. Hajiaghayi, D. Kowalski, **J.O.***),* **PODC 2023**.

4. *Deterministic Fault-Tolerant Distributed Computing in Linear Time and Communication*
   *(B. Chlebus, D. Kowalski, **J.O.**),* **PODC 2023.**
5. *Improved Communication Complexity of Fault-Tolerant Consensus*
   (M. Hajiaghayi, D. Kowalski, **J.O.**), **STOC 2022**.
6. *BA: Message-Optimal Deterministic Consensus for Crashes*
   (B. Chlebus, D. Kowalski, **J.O.**), **PODC 2022**.
7. *Improved Adaptive Massively Parallel Algorithms for Cut Problems*
   (M. Hajiaghayi, M. Knittel, **J.O.**, H. Saleh), **SPAA 2022**.
8. *Fast Agreement in Networks with Byzantine Nodes*
   (B. Chlebus, D. Kowalski, **J.O.**), **DISC 2020**.

## Service, teaching and talks

**Academic paper reviewer for the following conferences:**

- Annual ACM Symposium on Theory of Computing (**STOC 2024**)
- The European Symposium on Algorithms (**ESA 2023**)
- ACM-SIAM Symposium on Discrete Algorithms (**SODA 2023**)
- International Symposium on Algorithmics of Wireless Networks (**ALGOSENSORS 2022**)
- The Intern. Symposium on Distributed Computing (**DISC 2022**)
- The European Symposium on Algorithms (**ESA 2021**)
- Annual ACM Symposium on Theory of Computing (**STOC 2021**)
- The Intern. Symposium on Distributed Computing (**DISC 2021**)

**Teaching:** **Semesters: Fall 2021, Fall 2022**

University of Maryland, MD, USA

- Teaching Assistantship position for: Algorithms (2021), Algorithmic Lower Bounds (2022)

**Talks:**

- *BA: Improved Consensus in Quantum Networks (***PODC 2023***)*
- *Deterministic Fault-Tolerant Distributed Computing in Linear Time and Communication (***PODC 2023***)*
- *Improved Communication Complexity of Fault-Tolerant Consensus (***STOC 2022***)*
- *BA: Message-Optimal Deterministic Consensus for Crashes* (**PODC 2022**)
- Fast Agreement in Networks with Byzantine Nodes (**DISC 2020**)

## Awards

1. **62nd** / 19694, HUAWEI ICPC Online Challenge ($100.000 prize pool), 2022.
2. Finalist, International College Programming Contest North America, 2022.
3. **Bronze Medal,** International Olympiad in Informatics (IOI), 2017.
4. Silver Medal, Central European Olympiad in Informatics (CEOI), 2017.
5. **Gold Medal,** Polish Olympiad in Informatics, 2017.
6. Finalist, Polish Mathematical Olympiad, 2016 - 2017.

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7. University of Maryland Dean's fellowship, years 2021-2022
8. The Fellowship of the Dean of Math Department for Best Students, years 2017- 2020.

## Skills

- Programming languages and tools: C++, C, Python, MPI, Pytorch, Java.
- Communication: English (fluent), Polish (native), German (basic).