# JACOB IMOLA

**Curriculum Vitae**

Copenhagen, Denmark — jaim@di.ku.dk — jimola.github.io — U.S. Citizen

## EDUCATION

**Doctor of Philosophy** 2018-2023
UC San Diego, Jacobs School of Engineering
Dissertation: Practical Algorithms for Private Graph Statistics
Advisor: Kamalika Chaudhuri

**Master's Degree in Computer Science** 2018-2021
UC San Diego Jacobs School of Engineering
GPA: 3.7/4.0

**B.S. in Computer Science** 2014-2018
Carnegie Mellon University School of Computer Science
GPA: 3.85/4.0
Thesis: Fine-Grained, Automatic Choice for Differential Privacy
Advisor: Jean Yang

## EMPLOYMENT

**Postdoctoral Researcher** 2024-Now
University of Copenhagen
Copenhagen, Denmark
Host: Rasmus Pagh

**Research Intern** Summer 2022
Google
New York City
Host: Alessandro Epasto

**Research Intern** Summer 2021
Amazon, Inc.
Arlington, VA
Host: Abhinav Aggarwal

## PUBLICATIONS

### Conference Proceedings

*C1.* Jacob Imola, Amrita Roy Chowdhury, and Kamalika Chaudhuri. *Metric Differential Privacy at the User Level via Earth-Movers' Distance.* In **CCS 2024**. (Link)

*C2.* Jacob Imola, Alessandro Epasto, Mohammad Mahdian, Vincent Cohen-Addad, and Vahab Mirrokni. *Differentially-Private Hierarchical Clustering with Provable Approximation Guarantees.* In **ICML 2023**. (Link).

*C3.* Robi Bhattacharjee, Jacob Imola, Michal Moshkovitz, and Sanjoy Dasgupta. *Online $k$-means Clustering on Arbitrary Data Streams.* In **ALT 2023**. (Link)

*C4.* Jacob Imola, Takao Murakami, and Kamalika Chaudhuri. *Differentially Private Triangle and 4-Cycle Counting in the Shuffle Model.* In **CCS 2022**. (Link)

*C5.* Jacob Imola, Shiva Kasiviswanathan, Stephen White, Abhinav Aggarwal, Nathanael Teissier. *Balancing Utility and Scalability in Metric Differential Privacy.* In **UAI 2022**. (Link)

*C6.* Jacob Imola, Takao Murakami, and Kamalika Chaudhuri. *Communication-Efficient Triangle Counting under Local Differential Privacy.* In **USENIX Security 2022**. (Link)

*C7.* Jacob Imola, Takao Murakami, and Kamalika Chaudhuri. *Locally Differentially Private Analysis of Graph Statistics.* In **USENIX Security 2021**. (Link)

*C8.* Kamalika Chaudhuri, Jacob Imola, and Ashwin Machanavajjhala. *Capacity Bounded Differential Privacy.* In **NeurIPS 2019**. (Link)

### Preprints

*P1.* Jacob Imola, Amrita Roy Chowdhury, and Kamalika Chaudhuri. *Robustness of Locally Differentially Private Graph Analysis Against Poisoning.* (Link)

### Workshop Publications

*W1.* Amrita Roy Chowdhury, Jacob Imola, and Aashish Kolluri. *Per-User Histograms in the Shuffle Model.* In **TPDP Workshop 2023**. (Link)

*W2.* Jacob Imola and Kamalika Chaudhuri. *Privacy Amplification Via Bernoulli Sampling.* In **TPDP Workshop 2021**. (Link)

## RESEARCH INTERESTS

Broadly, I am interested in the design of practical algorithms that are pertinent to modern society.
**Differential Privacy:** I enjoy solving algorithmic challenges introduced by differential privacy, including overcoming information-related bottlenecks imposed by privacy (e.g. *C7.*, *C1.*) and utilizing sanitized data in a computationally-efficient way (e.g. *C2.*).
**Other Interests:** I find recent trends in explainable AI and the use of cryptography in machine learning to be interesting. My work tends to be theoretical in nature, but I am also interested in interdisciplinary approaches, such as using cryptography, formal methods, and empirical studies to design and evaluate solutions.

## INVITED TALKS

- November 2023. *Triangle Counting under Local Differential Privacy: Algorithms and Techniques.* Presented at Northeastern University.
- April 2023. *Counting Triangles in a Graph Under Local Differential Privacy.* Presented at University of Copenhagen.

## TEACHING EXPERIENCE

**CSE 151A: Intro to Machine Learning** Summer 2023
Institution: UC San Diego
This course is an introduction to machine learning for second-to-fourth year undergraduate students, and is normally a 10 week course. I taught the course over 5 weeks in the summer (meeting twice as often). I was the head instructor, and I instructed 40 students with help from one TA and three readers.

## AWARDS AND HONORS

**William Lowell Putnam Mathematics Competition**
Honorable Mention (Scored in ranks 35-65 of competitors)
Year: 2016

## SERVICE

**Program Committee**
UAI 2024.

**Reviewing**
Conference Reviewer for ICML 2021-2024, NeurIPS 2021-2024, UAI 2023.

**UCSD Graduate Women in Computer Science**
Mentor in 2021 & 2022.