TOMAS GONZALEZ LARA

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Website

EDUCATION

Carnegie Mellon University, School of Computer Science   Pittsburgh, Pennsylvania, US

Ph.D. in Machine Learning   2023-present
Advisors: Aaditya Ramdas and Giulia Fanti

Pontifical Catholic University of Chile, Institute for Mathematical and Computational Engineering   Santiago, Chile

Master of Science in Engineering   2023
Advisor: Prof. Cristobal Guzman
Thesis: "Stochastic first-order methods for differentially private machine learning"
Graduated with Maximum Distinction

Bachelor of Science in Engineering   2021
Major: Math for Data Science. Minor: Math for Theory of computation.
Graduated with Distinction

PUBLICATIONS

1. **Tomás González**, Cristóbal Guzmán and Courtney Paquette, "Mirror Descent Algorithms with Nearly Dimension-Independent Rates for Differentially-Private Stochastic Saddle-Point Problems". Accepted in Conference on Learning Theory (COLT) 2024.
2. Raman Arora, Raef Bassily, **Tomás González**, Cristóbal Guzmán, Michael Menart, and Enayat Ullah, "Faster Rates of Convergence to Stationary Points in Differentially Private Optimization". International Conference in Machine Learning (ICML) 2023.

EXPERIENCE

Google Deepmind   Montreal, Quebec, Canada

Student Researcher, Statistical Learning and Optimization team   Sep 2022 - Apr 2023
Supervisors: Courtney Paquette and Fabian Pedregosa.
Research: A Mirror Descent Method for Differentially Private Stochastic Saddle-Point Problems in ℓ_1 geometry.

Perceptron   Santiago, Chile

Data Science Intern   May - Jul 2022

Pontifical Catholic University of Chile   Santiago, Chile

Undergraduate Research Assistant   2019, 2021
Supervisor: Prof. Cristobal Guzman
Research: Non-Euclidean Differentially Private Stochastic Convex Optimization (2021)
Research: Sequential Games for Dynamic Inspection Problems (2019)

TEACHING

Pontifical Catholic University of Chile   Santiago, Chile

Teaching Assistant of undergraduate courses   2018-2022

1. (Head teaching assistant) Probability and algorithms (2021)
2. (Grading and teaching) Linear algebra (2018, 2019, 2022)
3. (Teaching) Discrete mathematics (2021)
4. (Grading) Discrete mathematics (2019, 2020)
5. (Grading and teaching) Calculus II (2020)

Teaching Assistant of postgraduate courses   2021-2022

1. (Grading) Visual recognition (2021)
2. (Grading) Relational and reinforcement models (2021, 2022)

FELLOWSHIPS AND AWARDS

- Graduate Fellowship, Machine Learning Department, School of Computer Science, Carnegie Mellon University (2023).
- Best Student Award, Institute for Mathematical and Computational Engineering, Pontificia Universidad Catolica de Chile (2023).
- Best Student in Mathematics Award (out of 750 students), Instituto Nacional High School (2016).
- High School Mathematical Olympiads:
  - International Mathematical Olympiad (IMO): Honorific Mention (Hong Kong, 2016).
  - Iberoamerican Mathematical Olympiad: Honorific Mention (Puerto Rico, 2015).
  - Southern Cone Mathematical Olympiad: Bronze Medal (Chile, 2015).
  - Chilean Mathematical Olympiad: Gold medal (2014), Silver medal (2015, 2013), Bronze medal (2016).

TALKS

1. "Differentially Private Stochastic Saddle-Point Problems in ℓ_1 geometry", SIAM Conference on Optimization (OP23), June 2023.
2. "Differentially Private Statistical Synthetic Data Generation", Tea Talks, Google Brain, January 2023.
3. "Differentially private stochastic non-convex optimization", Random Matrix Theory + Optimization + Machine Learning seminar at McGill University, October 2022.
4. "Differentially private stochastic non-convex optimization", International Conference on Continuos Optimization (ICCOPT), July 2022.
5. "Differentially private stochastic non-convex optimization", Algorithms, Combinatorics, Game Theory and Optimization seminar at University of Chile, July 2022.

SERVICE

- Reviewer for the Optimization for Machine Learning Workshop at NeurIPS (2022, 2023).
- Math tutor at 'Instituto Nacional' High School in . In charge of preparing a group of 25 high school students to participate in math olympiads at a national and international level.

Last update: June, 2024.