Juba Ziani

Education and research experience

Aug 2021 - now Assistant Professor, Georgia Institute of Technology, Industrial and Systems Engineering, Atlanta, GA.

 July 2019 - July
 Warren Center Postdoctoral Fellow, University of Pennsylvania, Warren Center for Network and Data

 2021
 Sciences, Philadelphia, PA.

 Worked on mechanism design machine learning in strategie settings, differential privacy, and fairness in machine learning.

Worked on mechanism design, machine learning in strategic settings, differential privacy, and fairness in machine learning. Hosted by Sampath Kannan, Michael Kearns, Aaron Roth, and Rakesh Vohra.

- Fall 2013 May
 P.h.D. (Computing and Mathematical Science), California Institute of Technology, Pasadena, CA.
 Worked on the algorithmic and mechanism design challenges, as well as the privacy and fairness concerns, that arise from the exchange and use of data.
 Advisors: Katrina Ligett and Adam Wierman.
 Thesis committee (05/29/2019): Laura Doval, Federico Echenique, Katrina Ligett, Aaron Roth, and Adam Wierman.
 August 2011 M.Sc (Operations Research), Columbia University, New York.
- May 2012 M.Sc awarded in May 2012. Double degree with Ecole Supérieure d'Electricité (Supélec).
- September 2009 June 2011
 June 2011
 B.Sc (Engineering, Energy and Information Sciences), Ecole Supérieure d'Electricité, now Centrale-Supélec, Gif, France.
 French Grande École. M.Sc awarded in Feb. 2013.

Awards

Best Paper Award at the IEEE Conference on Secure and Trustworthy Machine Learning (SATML), 2023.

Student Recognition of Excellence in Teaching at Georgia Tech. Annual CIOS Award, 2022 Fall CIOS Honor Roll,2022 Spring CIOS Honor Roll,2022

Georgia Tech ISyE Diversity, Equity, and Inclusion Fellow, 2022-2023.

Warren Center Postdoctoral Fellowship, 2019-2021.

Bhansali Family Doctoral prize in Computer Science at Caltech, *2019.* Best dissertation in Computer Science.

Inaugural PIMCO Graduate Fellowship at Caltech, 2018.

Linde Graduate Fellowship at Caltech, 2018.

Papers

Unless specified otherwise, authorship is alphabetical. Conference proceedings are the main publication venue in Computer Science.

Manuscripts

Sequential Strategic Screening, *L. Cohen, S. Sharifi-Malvajerdi, K. Stangl, A. Vakilian, J. Ziani.* In submission.

The Privacy Paradox and Optimal Bias-Variance Trade-offs in Data Acquisition, *G. Liao (co-first author)*, *Y. Su (co-first author)*, *J. Ziani*, *A. Wierman*, *J. Huang*. In revision at Operations Research. Conference version below. **Inference on Auctions with Weak Assumptions on Information**, *V. Syrgkanis, E. Tamer, and J. Ziani.* Manuscript.

Journal papers

Pipeline Interventions, *E.R. Arunachaleswaran*, *S. Kannan*, *A. Roth, and J. Ziani*. Mathematics of Operations Research, 2022. Conference and workshop versions below.

Third-party Data Providers Ruin Simple Mechanisms, Y. Cai, F. Echenique, H. Fu, K. Ligett, A. Wierman, and J. Ziani.

Proceedings of the ACM on Measurement and Analysis of Computing Systems (POMACS), 2020. Conference version below.

Joint Data Purchasing and Data Placement in a Geo-Distributed Data Market, X. Ren, P. London, J. Ziani, and A. Wierman.

IEEE/ACM Transactions on Networking (ToN), 2018.

Cliques in the union of graphs, *R. Aharoni*, *E. Berger*, *M. Chudnovsky*, and *J. Ziani*. Journal of Combinatorial Theory, Series B, 2015.

Conference papers

Wealth Dynamics Over Generations: Analysis and Interventions, K. Acharya, E.R Arunachaleswaran, S. Kannan, A. Roth, and J. Ziani.

IEEE Conference on Secure and Trustworthy Machine Learning (SATML), 2023.

Optimal Data Acquisition with Privacy-Aware Agents, *R. Cummings*, *H. Elzayn*, *V. Gkatzelis*, *E. Pountorakis*, and *J. Ziani*.

IEEE Conference on Secure and Trustworthy Machine Learning (SATML), 2023. Best paper award.

Information Discrepancy in Strategic Learning, *Y. Bechavod*, *C. Podimata*, *Z.S. Wu*, and *J. Ziani*. International Conference on Machine Learning (ICML), 2022.

The Privacy Paradox and Optimal Bias-Variance Trade-offs in Data Acquisition, *G. Liao (co-first author)*, *Y. Su (co-first author)*, *J. Ziani*, *A. Wierman*, *J. Huang.* ACM Conference on Economics and Computation (EC), 2021.

Algorithms and Learning for Fair Portfolio Design, E. Diana, T. Dick, H. Elzayn, M. Kearns, A. Roth, Z. Schutzman, S. Sharifi-Malvajerdi, and J. Ziani.

ACM Conference on Economics and Computation (EC), 2021.

Causal Feature Discovery through Strategic Modification, *Y. Bechavod*, *K. Ligett*, *Z. S. Wu*, and *J. Ziani*. International Conference on Artificial Intelligence and Statistics (AISTATS), 2021. Appeared at the Workshop on Incentives in Machine Learning (IML) at the 2020 International Conference on Machine

Learning (ICML).

Pipeline Interventions, E.R. Arunachaleswaran, S. Kannan, A. Roth, and J. Ziani.

Innovations in Theoretical Computer Science (ITCS), 2021.

Appeared as an oral presentation at the 4th Workshop on Mechanism Design for Social Good (MD4SG), 2020.

Differentially Private Call Auctions and Market Impact, E. Diana, H. Elzayn, M. Kearns, A. Roth, S. Sharifi-Malvajerdi, and J. Ziani.

ACM Conference on Economics and Computation (EC), 2020.

Third-party Data Providers Ruin Simple Mechanisms, Y. Cai, F. Echenique, H. Fu, K. Ligett, A. Wierman, and J. Ziani.

ACM SIGMETRICS Conference on Measurement and Modeling of Computer Systems, 2020 Journal version above

Downstream Effects of Affirmative Action, S. Kannan, A. Roth, and J. Ziani.

ACM Conference on Fairness, Accountability, and Transparency (FAccT, formerly known as FAT*), 2019.

Access to Population-Level Signaling as a Source of Inequality, *N. Immorlica, K. Ligett, and J.Ziani.* ACM Conference on Fairness, Accountability, and Transparency (FAccT, formerly known as FAT*), 2019.

Optimal Data Acquisition for Statistical Estimation, Y. Chen, N. Immorlica, B. Lucier, V. Syrgkanis, and J. Ziani.

ACM Conference on Economics and Computation (EC), 2018.

Non-Exploitable Protocols for Repeated Cake Cutting, *O. Tamuz, S. Vardi, and J. Ziani.* AAAI Conference on Artificial Intelligence (AAAI), 2018. Accuracy for Sale: Aggregating Data with a Variance Constraint, R. Cummings, K. Ligett, A. Roth, Z. S. Wu. and J. Ziani.

Innovations in Theoretical Computer Science (ITCS), 2015.

Other

Efficiently Characterizing Games consistent with Perturbed Equilibrium Observations, V. Chandrasekaran, K. Ligett, and J.Ziani.

Poster at the ACM Conference on Economics and Computation (EC), 2016. Master's thesis at Caltech.

Talks and presentations

Information Discrepancy in Strategic Learning.

California Institute of Technology, 2023 Toyota Technical Institute of Technology, 2023. Algorithmic Contract Design Workshop at EC, 2022.

Tutorial on Algorithmic Fairness.

Guest lecture for the"Machine Learning for Public Policy" class at UNU Merit - Maastricht University, 2022. Guest lecture in Katrina Ligett's reading group - Center for Information Technology Policy at Princeton University, 2022. ACM SIGecom Winter Meeting, 2022

Algorithms and Learning for Fair Portfolio Design.

Guest lecture at Georgia Tech, 2021.

Optimal Data Acquisition for Privacy-Aware Agents.

SATML 2023. ICS 2022. INFORMS 2021.

Pipeline Interventions.

Simons Institute for the Theory of Computing, 2022 RSRG/FALCON seminar at Caltech, 2022 ITCS, 2021 EconCS seminar at Harvard University, 2020 MD4SG workshop, 2020

Causal Feature Discovery Through Strategic Modification.

INFORMS Annual Meeting, 2020 IML workshop at ICML, 2020

Data: Implications for Markets and for Society.

Caltech-PIMCO Salon, 2020 Caltech defense, 2019 University of Pennsylvania, 2019

Third-Party Data Provider Ruin Simple Mechanisms.

SIGMETRICS, 2020 **INFORMS** Annual Meeting, 2019 Bellairs Workshop on Algorithmic Game Theory, 2018

Downstream Effects of Affirmative Action.

INFORMS Annual Meeting, 2019 FAT*, 2019 Poster presentation at the IMA at University of Minnesota, 2019

Access to Population-Level Signaling as a Source of Inequality.

FAT*, 2019

Optimal Data Acquisition for Statistical Estimation.

Rutgers/DIMACS theory seminar, 2019 SISL seminar at Caltech, 2019 INFORMS Annual Meeting, 2018 and 2019 Stanford Theory Seminar, 2018 EC'18

Efficiently Characterizing Games consistent with Perturbed Equilibrium Observations.

SISL seminar at Caltech, 2017 SoCal NEGT symposium, 2016 Poster presentation at EC, 2016 Accuracy for Sale: Aggregating Data with a Variance Constraint.

ITCS, 2015 Poster presentation at UCLA, 2015

Advising

- Spring 2023 Varun Vangala, Master's student in Data Analytics.
 Spring 2023 Jay Mulay, Undergraduate student in Industrial and Systems Engineering.
 Spring 2023 Samuel Hood, Co-Advised with Joel Sokol, PhD student in Machine Learning.
 Spring 2023 Now
 Spring 2023 Seung-Wan Jin, Co-Advised with Vidya Muthukumar, PhD student in Machine Learning.
 Spring 2023 Now
- Fall 2022 now **Diptangshu Sen**, PhD student in Operations Research.
- Fall 2021 now Krishna Acharya, PhD student in Machine Learning.

Teaching

- Fall 2023 ISYE4301: Supply Chain Economics, Georgia Institute of Technology.
- Fall 2023 **ISYE8813: Special Topics Algorithmic Foundations of Ethical Machine Learning**, *Georgia Institute of Technology*.
- Spring 2023 ISYE4803: Special Topics Online Learning and Decision Making, Georgia Institute of Technology.
- Fall 2022 ISYE4301: Supply Chain Economics, Georgia Institute of Technology.
- Spring 2022 ISYE4301: Supply Chain Economics, Georgia Institute of Technology.
 - Fall 2021 ISYE8813: Special Topics Algorithmic Foundations of Ethical Machine Learning, Georgia Institute of Technology.
 - Fall 2014 Teaching Assistant for CS/SS 152: Introduction to Data Privacy, California Institute of Technology.
 - Fall 2013 **Teaching Assistant for SS/CS 149: Introduction to Algorithmic Economics**, *California Institute of Technology*.

Service

Conference Organization.

Co-organizing the doctoral consortium at ACM conference on Equity and Access in Algorithms, Mechanisms, and Optimization (EAAMO) 2022 with Hamsa Bastani.

Journal Reviews.

Transactions on Machine Learning Research, 2023. Management Science, 2021, 2022, 2023. Operations Research, 2021, 2022, 2023. Theoretical Computer Science, 2022. Artificial Intelligence, 2022. Journal of Business and Economic Statistics 2020, 2021.

Program committee/Reviewer.

ACM conference on Economics and Computation (EC), 2023. Conference on Learning Theory (COLT), 2023. Reduced load. ACM conference on Fairness, Accountability, and Transparency (FAccT), 2023. Reduced load. International Conference on Artificial Intelligence and Statistics (AISTATS), 2023. Area chair. International Conference on Learning Representations (ICLR), 2023. Conference on Neural Information Processing Systems (NeurIPS), 2022. Top reviewer award. ACM Conference on Equity and Access in Algorithms, Mechanisms, and Optimization (EAAMO), 2022. ACM conference on Economics and Computation (EC), 2022. Reduced load. ACM conference on Fairness, Accountability, and Transparency (FAccT), 2022. Reduced load. Conference on Uncertainty and Artificial Intelligence (UAI), 2022. Reduced load. Conference on Learning Theory (COLT), 2022. Artificial Intelligence and Statistics Conference (AISTATS), 2022. Top reviewer award. International Conference on Learning Representations (ICLR), 2022. Strategic Machine Learning Workshop at NeurIPS, 2021. Conference on Neural Information Processing Systems (NeurIPS) 2021 (technical and ethical reviewer). ICML Workshop on Socially Responsible Machine Learning (SRML), 2021. ACM conference on Equity and Access in Algorithms, Mechanisms, and Optimization (EAAMO), 2021. Theory and Practice of Differential Privacy (TPDP) 2021. Workshop on People-Centric Operations at EC 2021. ACM Conference on Economics and Computation (EC), 2021. ACM Conference on Fairness, Accountability, and Transparency (FAccT), 2021. Theory and Practice of Differential Privacy (TPDP) 2020. Conference on Neural Information Processing Systems (NeurIPS) 2020. Conference on Learning Theory (COLT) 2020. ACM conference on Economics and Computation (EC) 2020. Association for the Advancement of Artificial Intelligence Conference on Artificial Intelligence (AAAI) 2020. Conference on Neural Information Processing Systems (NeurIPS) 2019. Top reviewer award. International Conference on Machine Learning (ICML) 2019.

External Reviewer.

WINE 2015, TCC-b 2016, SAGT 2016, SODA 2017, UAI 2018, SODA 2019, STOC 2019, WINE 2019, SODA 2020, ITCS 2020, ITCS 2021, SODA 2022, ITCS 2022, FORC 2023.

Grant Reviews and Panels.

National Science Foundation, 2022. Department of Energy, 2022. Israeli Science Foundation, 2022.

Outreach.

Gave a presentation about Georgia Tech ISyE to about 250 high school students at Banneker High School, a high school with 97% minority enrollment.

Taught lectures on differential privacy as part of the AI4OPT Faculty Training Program to faculty members in Historically Black Colleges and Universities and Minority Serving Institutions.

Organized an activity session on game theory and its applications to industrial engineering to high school students as part of Summer 2022 Mission Possible.

Co-organized an activity session for the 30 high school students during the 2022 Probability and Statistics High School Competion at Georgia Tech, with Ashwin Panajandy.

Seminar Organization.

Co-organizer of the main Georgia Tech ISyE seminar series with Gian-Gabriel Garcia and Ashwin Panajandy, Spring 2023. Co-organizer of the Georgia Tech ISyE invited seminar by DEI fellows with Weijun Xi,e aimed at promoting researchers from underrepresented backgrounds and research aimed at advancing DEI, Fall 2022 - Spring 2023.

Co-organizer of the Theory of Computing for Fairness (TOC 4 fairness) seminar series (as part of the Simons Foundation TOC4Fairness collaboration) with Saeed-Sharifi Malvajerdi since Spring 2021.

Session Chairing.

" Model governance" session - SATML 2023.

"Learning to Play" session – EC 22.

"Privacy by Design" session - EC 22.

"Market Design and Societal Concerns" - INFORMS Annual Meeting 2019.

Other service.

Gave a "How-to" presentation to PhD students at the EC 2022 Mentoring Workshop. Mentored for #BlackinSTEM, NeurIPS 2020.