

Flavio du Pin Calmon

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Professional Experience

Harvard University <i>Assistant Professor at the John A. Paulson School of Engineering and Applied Sciences</i>	Cambridge, MA 2017–present
IBM T.J. Watson Research Center <i>Inaugural Data Science for Social Good Post-Doctoral Fellow</i>	Yorktown Heights, NY 2015–2017
Technicolor Research <i>Research Intern</i>	Palo Alto, CA 2012

Education

Massachusetts Institute of Technology (MIT) <i>Ph.D. in Electrical Engineering and Computer Science</i>	Cambridge, MA 2015
Universidade Estadual de Campinas (Unicamp) <i>M.Sc. in Electrical and Computer Engineering</i>	São Paulo, Brazil 2009
Universidade de Brasília (UnB) <i>B.Sc. in Communications Engineering</i>	Distrito Federal, Brazil 2006

Awards, Honors, and Fellowships

2021: Inaugural Título de Honra ao Mérito (Honor to the Merit Title) from the Universidade de Brasília. The award is given to alumni who have achieved national and/or international recognition. I was the first alumni chosen in the area of computer science, engineering, statistics, and mathematics.

2021: Bias² Fund Award, Harvard Data Science Initiative.

2020: Special Commendation for Extraordinary Teaching in Extraordinary Times, Harvard College.

2020: Oracle Research Award.

2020: Amazon Research Award.

2019: Google Faculty Research Award in Machine Learning and Data Mining.

2019: NSF Faculty Early Career Development Program (CAREER) Award.

2018: IBM Open Collaborative Research Award.

2018 and 2019: Lemann Brazil Research Award for teaching Machine Learning in Latin America.

2018: Nvidia GPU Grant.

2017 and 2019: Dean's Competitive Fund for Promising Scholarship, Harvard University.

2016: IBM inaugural Social Good Post-Doctoral Fellowship for research in data science projects that promote social good.

2011: Avery Alan Ashdown Leadership Award for outstanding service and leadership to the MIT community.

2009: Irwin Mark Jacobs and Joan Klein Jacobs Presidential Fellowship for graduate studies at MIT.

2007-2009: The State of São Paulo Research Foundation (FAPESP) scholarship for M.Sc. research.

2006: Honor of Merit Award from the Brazilian Council of Engineers for best overall academic performance in the Communications Engineering graduating class of the University of Brasilia.

2004–2006: Brazilian National Council for Scientific and Technological Development (CNPq) scholarship for undergraduate research.

Sponsored Research

2021–2024: FAI: Foundations of Fair AI in Medicine: Ensuring the Fair Use of Patient Attributes (Lead PI). Co-PIs: Elena Glassman (Harvard), Berk Ustun (UCSD). Amount (total/PI share): \$1M/\$625k.

2019–2021: NSF EAGER: AI-DCL: Collaborative Research: Understanding and Overcoming Biases in STEM Education using Machine Learning (Lead PI). Co-PIs: Muriel Médard (MIT), Nilanjana Dasgupta (UMass Amherst). Amount (total/PI share): \$300k/\$250k.

2019–2021: NSF CIF: Medium: Collaborative Research: Information-theoretic Guarantees on Privacy in the Age of Learning (co-PI). Lead PI: Lalitha Sankar (ASU). Co-PI: Oliver Kosut (ASU). Amount (total/PI share) \$1.2M/\$380k.

2019–2024: NSF CAREER: Information-Theoretic Foundations of Fairness in Machine Learning (Sole PI). Amount: \$540k.

Teaching

- **Harvard SEAS:**
 - Fall 2022: Information Theory (ENG-SCI 250).** Instructor Rating: 5.0/Course rating: 4.6
 - Spring 2021: Signals and Communications (ENG-SCI 156).** Instructor Rating: 4.8/Course rating: 4.1
 - Spring 2020: Signals and Communications (ENG-SCI 156).** Received commendation for “Extraordinary Teaching in Extraordinary Times” from Dean of Undergraduate Education (ratings were not collected due to the pandemic).
 - Fall 2019: Information Theory (ENG-SCI 250).** Instructor Rating: 4.9/Course rating: 4.9
 - Spring 2019: Signals and Communications (ENG-SCI 156).** Instructor Rating: 4.8/Course rating: 4.6
 - Spring 2018: Signals and Systems (ENG-SCI 156).** Instructor Rating: 4.9/Course rating: 4.1
 - Fall 2017: Information Theory (ENG-SCI 250).** Instructor Rating: 4.8/Course rating: 4.6
- **Harvard Business School:**
 - 2019–2022: Harvard Business Analytics Program.** Lecturer for immersion program.
- **Outreach:**
 - August 2019: Dados, Inferência e Aprendizagem (Data, Inference, and Learning).** Taught at the Faculdade de Engenharia Elétrica e da Computação (FEEC), Universidade de Campinas (Unicamp), Brazil.

Tutorials

- 2022: IEEE International Symposium on Information Theory Tutorial: Information-Theoretic Tools for Responsible Machine Learning.**
- 2019: IEEE International Symposium on Information Theory Tutorial: Privacy and Fairness in Data Science: An Information-theoretic Perspective.**

Service

- 2021–present:** Area Chair for NeurIPS.
- 2021:** Organizer of the ICML-21 Workshop on Information-Theoretic Methods for Rigorous, Responsible, and Reliable Machine Learning.
- 2020–2022:** Harvard SEAS Graduate Admissions and Scholarship Diversity Committee.
- 2019–present:** Harvard Brazil Studies Program Faculty Steering Committee.
- 2019–present:** Technical Program Committee for the International Symposium on Information Theory (ISIT).
- 2019–present:** Harvard SEAS Engineering Sciences Committee on Higher Degrees.
- 2019:** Publicity Chair for the IEEE North American School of Information Theory (Boston, July 2019).
- 2018–2022:** NSF CISE Panel Member.
- 2018:** Program Committee for the ACM Conference on Fairness, Accountability, and Transparency (ACM FAT*).
- 2018:** Harvard Brazil studies program faculty advisory committee.
- 2018–2019:** Harvard SEAS EE graduate admissions committee.
- 2017:** Data Jam organizer at the KDD 2017 Broadening Participation in Data Mining Workshop for underrepresented students.
- 2014-2015:** Mentor for the MIT undergraduate research opportunities program (UROP)
- 2008–Present:** Reviewer for the IEEE Trans. on Info. Theory, Journal of Machine Learning Research, ICML, NeurIPS, ACM FAccT Conference, ACM WWW Conference, IEEE Trans. on Wireless Communications, IEEE Trans. on Info. Forensics and Security, IEEE International Symposium on Info. Theory, IEEE Info. Theory Workshop, IEEE International Conference on Communications, IEEE Vehicular Technology Conference

Current and Past Group Members at Harvard

- **Current Graduate Students:**
 - **Hsiang Hsu:** G6, Computer Science.
 - **Wael Alghamdi :** G6, Applied Math.
 - **Carol Long :** G2, Applied Math.
 - **Lucas Wagner Monteiro Paes:** G2, Applied Math.
 - **Alex Oesterling:** G1, Computer Science.
- **Current Undergraduate Researchers:**
 - **Lucy He:** Computer Science.
 - **Raymond Feng:** Computer Science.

- **Winston Michalak**: Electrical Engineering.
- **Former Graduate Students Supervised:**
 - **Hao Wang**: 2017-2022. **Thesis Title**: Information Theory for Trustworthy Machine Learning. Next Stop: Post-doc at MIT-IBM Waston AI Lab.
- **Former Post-docs Supervised:**
 - **Mario Diaz**: Joint post-doc with ASU. Next stop: Assistant Professor at Universidad Nacional Autónoma de México (UNAM).
 - **Berk Ustun**: CRCS Affiliate. Next stop: Assistant Professor in Computer Science at UCSD.
 - **Javier Zazo**: CRCS Affiliate. Next stop: Microsoft Research, UK.
 - **Juwendo Denis**: Electrical Engineering. Next Step: Parallel Wireless, MA.
 - **Shahab Asoodeh**: Electrical Engineering. Next Stop: Assistant Professor in Computer Science at McMaster University, Canada.
 - **Haewon Jeong**: Electrical Engineering. Next stop: Assistant Professor in ECE at UCSB.
- **Former Master Students:**
 - **Madeleine Barowsky**: M.Sc. in Computer Science. Next Stop: Software Engineer at Etsy.
 - **Filip Michalsky**: ME in Computational Science & Engineering. Next stop: Fidelity Investments.
 - **Claire (Zheng) Yang**: ME in Computational Science & Engineering.
- **Former Undergraduate Research Advisees (Harvard College):**
 - **Jessica Edwards**: Computer Science. Next stop: Software Engineer at Microsoft.
 - **Alexander Mariona**: Electrical Engineering. Next stop: PhD student at EECS MIT.
 - **Marguerite Basta**: Electrical Engineering. Next stop: MBA at MIT Sloan.
 - **Zachary Mohammed**: Applied Math.
 - **Lisa Vo**: Computer Science. Next stop: startup founder.
 - **David Xu**: Electrical Engineering. Next stop: Amazon.
 - **Michael Wu**: Computer Science (still at Harvard College).
- **Former Long-Term Visitors:**
 - **Prof. Cândido Silveira Santos Filho**: Universidade de Campinas, Brazil.
 - **Prof. Taesup Moon**: Seoul National University.

Invited Seminars and Lectures

- **2022**
 - DCL Seminar at Georgia Tech
 - Science Foundation Ireland Centre for Research Training in Foundations of Data Science
 - Lecture at MIT 6.S076 – Special Subject in Electrical Engineering and Computer Science
 - Seminario de Probabilidad para estudiantes de posgrado, IMAS/UNAM (Mexico)
 - LIONS Seminar at Arizona State University
 - Panelist at the Harvard Brazil Collaboration event at the Museu do Amanhã in Rio de Janeiro, Brazil (in Portuguese)
 - Speaker at the 2022 Harvard Brazil Alumni Event in Rio de Janeiro, Brazil (in Portuguese)
- **2021[†]**
 - Fórum Permanente: Estratégias para a Inteligência Artificial at Unicamp, Brazil (in Portuguese)
 - Fundação Estudar 30 year anniversary event (in Portuguese)
- **2020**
 - Carnegie Mellon ECE Seminar
 - Oracle Research (Burlington, MA)
 - Information Theory and Applications Workshop (ITA), San Diego
 - Invited speaker at MIT's Special Topics on Signal Processing Course
 - Invited speaker at Carnegie Mellon University's Information Theory Course
- **2019**
 - New York University ECE Seminar Series
 - Universidade Estadual de Campinas (Unicamp), Campinas, Brazil
 - Insper Learning Institution, São Paulo, Brazil
 - Harvard Alumni Summit, São Paulo, Brazil
 - Invited Session on Fairness and Privacy, IEEE International Symp. on Info. Theory

[†]On parental leave during the 2020-2021 academic year.

- 2019 New England Machine Learning Day
- Shannon Channel (Youtube)
- Hamilton Institute Seminar, NUI Maynooth, Ireland
- Brown University Data Science Colloquium
- Anheuser-Busch InBev Board Annual Retreat
- Microsoft Research Seattle
- Google Research Seattle
- Simons Institute Symposium on Information-Theoretic Methods for Privacy
- Northeastern University SPIRAL Seminar Series
- Boston University CISE Seminar
- Information Theory and Applications Workshop (ITA), San Diego
- Harvard IACS Computefest
- **2018**
 - Worcester Polytechnic Institute, Electrical Engineering Seminar
 - Harvard Statistics Seminar
 - Harvard IACS Seminar
 - Stanford ISL Information Theory Forum
 - Mitsubishi Electric Research Laboratories
 - UMass Amherst Information Theoretic Privacy Workshop
 - Information Theory and Applications Workshop (ITA), San Diego
- **2017**
 - Machine Learning for Creativity Workshop at SIGKDD'17, Halifax, CA
 - MIT (Prof. Yury Polyanskiy's Group Meeting)
 - NSF Workshop, University of Delaware, 2017
- **Pre-2017**
 - 50th Conference on Information Sciences and Systems (CISS), Princeton NJ, 2016
 - New Jersey Institute of Technology, 2016
 - IBM T.J. Watson Research Center, 2015
 - Harvard University, EE Seminar Series, 2015
 - University of Southern California, 2015
 - Princeton University, 2014
 - University of Illinois at Urbana-Champaign, 2014
 - Interdisciplinary Workshop on Data Privacy, Hamilton Institute, Ireland, 2014
 - Hamilton Institute, Ireland, 2013
 - Polytech Annecy-Chambéry, Annecy, France, 2013
 - UC Berkeley, California, 2012
 - Technicolor Research, Palo Alto, California 2012

Publications[†]

Journal Publications.....

- [J1] **H. Wang**, R. Gao, and **F. P. Calmon**, "Generalization bounds for noisy iterative algorithms using properties of additive noise channels," *J. Mach. Learn. Res (accepted)*, 2022.
- [J2] **W. Alghamdi** and **F. P. Calmon**, "Measuring information from moments," *IEEE Trans. on Inf. Theory (accepted)*, 2022.
- [J3] **H. Hsu**, N. L. Martinezzgil, M. Bertran, G. Sapiro, and **F. P. Calmon**, "A survey on statistical, information, and estimation—theoretic views on privacy," *IEEE BITS the Information Theory Magazine*, vol. 1, no. 1, pp. 45–56, 2021.
- [J4] **H. Hsu**, S. Salamatian, and **F. P. Calmon**, "Generalizing correspondence analysis for applications in machine learning," *IEEE Trans. on Pattern Analysis and Machine Intelligence (to appear)*, 2021.
- [J5] D. Wei, K. N. Ramamurthy, and **F. P. Calmon**, "Optimized score transformation for consistent fair classification," *J. Mach. Learn. Res.*, vol. 22, pp. 258–1, 2021.
- [J6] **H. Wang**, **H. Hsu**, **M. Diaz**, and **F. P. Calmon**, "To split or not to split: The impact of disparate treatment in classification," *IEEE Trans. Inf. Theory*, vol. 67, no. 10, pp. 6733–6757, 2021.
- [J7] **H. Jeong**, A. Devulapalli, V. R. Cadambe, and **F. P. Calmon**, " ϵ -approximate coded matrix multiplication is nearly twice as efficient as exact multiplication," *IEEE J. Sel. Areas Inf. Theory*, 2021.

[†] **Bold names** highlight authors who are current and former students or post-docs in PI Calmon's research group at Harvard University. Entries with first author in bold indicate papers where PI Calmon is either the lead senior author or first author.

- [J8] **S. Asoodeh**, J. Liao, **F. P. Calmon**, O. Kosut, and L. Sankar, “Three variants of differential privacy: Lossless conversion and applications,” *IEEE J. Sel. Areas Inf. Theory*, vol. 2, no. 1, pp. 208–222, 2021.
- [J9] **M. Diaz**, **H. Wang**, **F. P. Calmon**, and L. Sankar, “On the robustness of information-theoretic privacy measures and mechanisms,” *IEEE Trans. Inf. Theory*, vol. 66, no. 4, pp. 1949–1978, April 2020.
- [J10] **S. Asoodeh** and **F. P. Calmon**, “Bottleneck problems: An information and estimation-theoretic view,” *Entropy (invited paper)*, vol. 22, no. 11, p. 1325, 2020.
- [J11] F. R. A. Parente, **F. P. Calmon**, and J. C. S. Santos Filho, “Asymptotic system performance over generalized fading channels with application to maximal-ratio combining,” *Journal of Communication and Information Systems*, vol. 35, no. 1, pp. 171–180, 2020.
- [J12] **H. Wang**, **L. Vo**, **F. P. Calmon**, M. Médard, K. R. Duffy, and M. Varia, “Privacy with estimation guarantees,” *IEEE Trans. Inf. Theory*, vol. 65, no. 12, pp. 8025–8042, Dec 2019.
- [J13] J. Liao, O. Kosut, L. Sankar, and **F. P. Calmon**, “Tunable measures for information leakage and applications to privacy-utility tradeoffs,” *IEEE Trans. Inf. Theory*, vol. 65, no. 12, pp. 8043–8066, Dec 2019.
- [J14] S. Majumdar, B. Han, **F. P. Calmon**, B. Glicksberg, R. Horesh, A. Kumar, A. Perer, E. V. Marschall, D. Wei, A. Mojsilović, and K. Varshney, “Confronting data sparsity to identify potential sources of zika virus spillover infection among primates,” *Epidemics*, vol. 27, pp. 59–65, June 2019.
- [J15] **F. P. Calmon**, D. Wei, B. Vinzamuri, K. N. Ramamurthy, and K. Varshney, “Data pre-processing for discrimination prevention: Information-theoretic optimization and analysis,” *IEEE J. Sel. Topics Signal Proces*, vol. 12, no. 5, pp. 1106–1119, Oct. 2018.
- [J16] **F. P. Calmon**, Y. Polyanskiy, and Y. Wu, “Strong data processing inequalities for input constrained additive noise channels,” *IEEE Trans. Inf. Theory*, vol. 64, no. 3, pp. 1879–1892, March 2018.
- [J17] J. Liao, L. Sankar, V. Y. F. Tan, and **F. P. Calmon**, “Hypothesis testing under mutual information privacy constraints in the high privacy regime,” *IEEE Trans. Inf. Forensics Security*, vol. 13, no. 4, pp. 1058–1071, 2018.
- [J18] F. P. Calmon, Á. A. M. de Medeiros, and M. D. Yacoub, “Mutual outage probability,” *IEEE Trans. Wireless Commun.*, vol. 16, no. 5, pp. 3138–3150, 2017.
- [J19] **F. P. Calmon**, A. Makhdoumi, M. Médard, M. Varia, M. Christiansen, and K. R. Duffy, “Principal inertia components and applications,” *IEEE Trans. Inf. Theory*, vol. 63, no. 8, pp. 5011–5038, 2017.
- [J20] M. M. Christiansen, K. R. Duffy, **F. P. Calmon**, and M. Médard, “Multi-user guesswork and brute force security,” *IEEE Trans. Inf. Theory*, vol. 61, no. 12, pp. 6876 – 6886, Dec 2015.
- [J21] S. Salamatian, A. Zhang, F. Calmon, S. Bhamidipati, N. Fawaz, B. Kveton, P. Oliveira, and N. Taft, “Managing your private and public data: Bringing down inference attacks against your privacy,” *IEEE J. Sel. Topics Signal Proces*, vol. 9, no. 7, pp. 1240–1255, 2015.
- [J22] A. Rezaee, **F. P. Calmon**, L. M. Zeger, and M. Médard, “Speeding multicast by acknowledgment reduction technique (SMART) enabling robustness of QoE to the number of users,” *IEEE J. Sel. Areas Commun.*, vol. 30, no. 7, pp. 1270 –1280, Aug. 2012.
- [J23] **F. P. Calmon** and M. D. Yacoub, “MRCS – selecting maximal ratio combined signals: a practical hybrid diversity combining scheme,” *IEEE Trans. Wireless Commun.*, vol. 8, no. 7, pp. 3425–3429, Jul. 2009.

Peer-Reviewed Conference Proceedings.....

- [C1] **L. Paes**, **C. Long**, B. Ustun, and **F. P. Calmon**, “On the epistemic limits of personalized prediction,” *Accepted to the Thirty-sixth Conference on Neural Information Processing Systems (NeurIPS’22)*, 2022.
- [C2] **W. Alghamdi**, **H. Hsu**, **H. Jeong**, **H. Wang**, **P. W. Michalak**, **S. Asoodeh**, and **F. P. Calmon**, “Beyond Adult and COMPAS: Fairness in multi-class prediction,” *Accepted as Oral Presentation at the Thirty-sixth Conference on Neural Information Processing Systems (NeurIPS’22)*, preprint arXiv:2206.07801, 2022.
- [C3] **H. Hsu** and **F. P. Calmon**, “Rashomon capacity: A metric for predictive multiplicity in probabilistic classification,” *Accepted to the Thirty-sixth Conference on Neural Information Processing Systems (NeurIPS’22)*, preprint arXiv:2206.01295, 2022.
- [C4] A. Devulapalli, V. R. Cadambe, **F. P. Calmon**, and H. Jeong, “Differentially private distributed matrix multiplication: Fundamental accuracy-privacy trade-off limits,” in *2022 IEEE International Symposium on Information Theory (ISIT)*. IEEE, 2022, pp. 2016–2021.

- [C5] **W. Alghamdi, S. Asoodeh, F. P. Calmon, O. Kosut, L. Sankar, and F. Wei**, “Cactus mechanisms: Optimal differential privacy mechanisms in the large-composition regime,” in *2022 IEEE International Symposium on Information Theory (ISIT)*. IEEE, 2022, pp. 1838–1843.
- [C6] **H. Jeong, H. Wang, and F. P. Calmon**, “Fairness without imputation: A decision tree approach for fair prediction with missing values,” in *Proceedings of the AAAI Conference on Artificial Intelligence (Oral Presentation)*, vol. 36, no. 9, 2022, pp. 9558–9566.
- [C7] **H. Wang, Y. Huang, R. Gao, and F. P. Calmon**, “Analyzing the generalization capability of SGLD using properties of Gaussian channels,” *Advances in Neural Information Processing Systems*, vol. 34, pp. 24 222–24 234, 2021.
- [C8] **S. Asoodeh, W.-N. Chen, F. P. Calmon, and A. Ozgur**, “Differentially private federated learning: An information-theoretic perspective,” *Proc. IEEE Int. Symp. on Inf. Theory (ISIT)*, pp. 344–349, 2021.
- [C9] **V. Cadambe, F. P. Calmon, A. Devulapalli, and H. Jeong**, “ ϵ -approximate coded matrix multiplication is nearly twice as efficient as exact multiplication-approximate coded matrix multiplication is nearly twice as efficient as exact multiplication,” *Proc. IEEE Int. Symp. on Inf. Theory (ISIT)*, pp. 1582–1587, 2021.
- [C10] **S. Asoodeh and M. a. Aliakbarpour**, “Local differential privacy is equivalent to contraction of an f -divergence,” *Proc. IEEE Int. Symp. on Inf. Theory (ISIT)*, pp. 545–550, 2021.
- [C11] **W. Alghamdi and F. P. Calmon**, “Polynomial approximations of conditional expectations in scalar Gaussian channels,” *Proc. IEEE Int. Symp. on Inf. Theory (ISIT)*, pp. 420–425, 2021.
- [C12] **H. Wang, M. Diaz, and F. P. Calmon**, “The impact of split classifiers on group fairness,” *Proc. IEEE Int. Symp. on Inf. Theory (ISIT)*, pp. 3179–3184, 2021.
- [C13] **M. Barowsky and A. Mariona and F. P. Calmon**, “Predictive coding for lossless dataset compression,” in *IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*. IEEE, 2021, pp. 1545–1549.
- [C14] **B. Razeghi, S. Ferdowsi, D. Kostadinov, F. P. Calmon, and S. Voloshynovskiy**, “Privacy-preserving near neighbor search via sparse coding with ambiguation,” in *IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*. IEEE, 2021, pp. 2635–2639.
- [C15] **S. Cha, H. Hsu, T. Hwang, F. P. Calmon, and T. Moon**, “CPR: Classifier-projection regularization for continual learning,” in *International Conference on Learning Representations*, 2020.
- [C16] **B. Razeghi, F. P. Calmon, D. Gündüz, and S. Voloshynovskiy**, “On perfect obfuscation: Local information geometry analysis,” in *2020 IEEE International Workshop on Information Forensics and Security (WIFS)*. IEEE, 2020, pp. 1–6.
- [C17] **H. Hsu, S. Asoodeh, and F. P. Calmon**, “Obfuscation via information density estimation,” in *Int. Conf. on Artificial Intelligence and Statistics (AISTATS)*, ser. Proceedings of Machine Learning Research, vol. 108. PMLR, 26–28 Aug 2020, pp. 906–917.
- [C18] **D. Wei, K. N. Ramamurthy, and F. P. Calmon**, “Optimized score transformation for fair classification,” in *Int. Conf. on Artificial Intelligence and Statistics (AISTATS)*, ser. Proceedings of Machine Learning Research, vol. 108. Online: PMLR, 26–28 Aug 2020, pp. 1673–1683.
- [C19] **S. Asoodeh, J. Liao, F. P. Calmon, O. Kosut, and L. Sankar**, “A better bound gives a hundred rounds: Enhanced privacy guarantees via f -divergences,” in *Proc. IEEE Int. Symp. on Inf. Theory (ISIT)*, 2020, pp. 920–925.
- [C20] **F. R. A. Parente, F. P. Calmon, and J. C. S. Santos Filho**, “High-snr performance in gaussian-class fading,” in *IEEE International Conference on Communications (ICC)*, 2020, pp. 1–7.
- [C21] **J. Liao, L. Sankar, O. Kosut, and F. P. Calmon**, “Maximal α -leakage and its properties,” in *IEEE Conference on Communications and Network Security (CNS)*. IEEE, 2020, pp. 1–6.
- [C22] **W. Alghamdi, S. Asoodeh, H. Wang, F. P. Calmon, D. Wei, and K. N. Ramamurthy**, “Model projection: Theory and applications to fair machine learning,” in *Proc. IEEE Int. Symp. on Inf. Theory (ISIT)*, 2020, pp. 2711–2716.
- [C23] **C. T. Marx, F. P. Calmon, and B. Ustun**, “Predictive Multiplicity in Classification,” *Int. Conf. on Machine Learning (ICML)*, 2020.
- [C24] **S. Asoodeh, M. Diaz, and F. P. Calmon**, “Privacy amplification of iterative algorithms via contraction coefficients,” in *Proc. IEEE Int. Symp. on Inf. Theory (ISIT)*, 2020, pp. 896–901.

- [C25] S. Ferdowsi, B. Razeghi, T. Holotyak, **F. P. Calmon**, and S. Voloshynovskiy, "Privacy-preserving image sharing via sparsifying layers on convolutional groups," in *IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*. IEEE, 2020, pp. 2797–2801.
- [C26] **H. Wang**, **M. Diaz**, J. C. S. S. Filho, and **F. P. Calmon**, "An information-theoretic view of generalization via wasserstein distance," *Proc. IEEE Int. Symp. on Inf. Theory (ISIT)*, 2019.
- [C27] **H. Hsu**, S. Salamatian, and **F. P. Calmon**, "Correspondence analysis using neural networks," in *Int. Conf. on Artificial Intelligence and Statistics (AISTATS)*, 2019.
- [C28] **H. Hsu**, **S. Asoodeh**, and **F. P. Calmon**, "Information-theoretic privacy watchdogs," *Proc. IEEE Int. Symp. on Inf. Theory (ISIT)*, 2019.
- [C29] **W. Alghamdi** and **F. P. Calmon**, "Mutual information as a function of moments," *Proc. IEEE Int. Symp. on Inf. Theory (ISIT)*, 2019.
- [C30] **H. Wang**, **B. Ustun**, and **F. P. Calmon**, "Repairing without retraining: Avoiding disparate impact with counterfactual distributions," in *Proc. International Conference on Machine Learning (ICML)*, 2019.
- [C31] J. Liao, L. Sankar, O. Kosut, and **F. P. Calmon**, "Robustness of maximal α -leakage to side information," *Proc. IEEE Int. Symp. on Inf. Theory (ISIT)*, 2019.
- [C32] J. Liao, O. Kosut, L. Sankar, and **F. P. Calmon**, "A tunable measure for information leakage," *Proc. IEEE Int. Symp. on Inf. Theory (ISIT)*, pp. 701–705, 2018.
- [C33] **H. Hsu**, **S. Asoodeh**, S. Salamatian, and **F. P. Calmon**, "Generalizing Bottleneck Problems," *Proc. IEEE Int. Symp. on Inf. Theory (ISIT)*, pp. 531–535, 2018.
- [C34] **H. Wang**, B. Ustun, and **F. P. Calmon**, "On the direction of discrimination: An information-theoretic analysis of disparate impact in machine learning," *Proc. IEEE Int. Symp. on Inf. Theory (ISIT)*, pp. 1216–1220, 2018.
- [C35] J. Liao, O. Kosut, L. Sankar, and **F. P. Calmon**, "Privacy under hard distortion constraints," *IEEE Information Theory Workshop*, 2018.
- [C36] **H. Wang**, **M. Diaz**, **F. P. Calmon**, and L. Sankar, "The utility cost of robust privacy guarantees," *Proc. IEEE Int. Symp. on Inf. Theory (ISIT)*, pp. 706–710, 2018.
- [C37] **H. Wang** and **F. P. Calmon**, "An estimation-theoretic view of privacy," in *Proc. 55th Annual Allerton Conference on Communication, Control, and Computing*, 2017.
- [C38] J. Liao, L. Sankar, **F. P. Calmon**, and V. Y. Tan, "Hypothesis testing under maximal leakage privacy constraints," in *Proc. IEEE Int. Symp. on Inf. Theory (ISIT)*, 2017, pp. 779–783.
- [C39] **F. P. Calmon**, D. Wei, B. Vinzamuri, K. N. Ramamurthy, and K. R. Varshney, "Optimized pre-processing for discrimination prevention," in *Advances in Neural Information Processing Systems (NIPS)*, 2017, pp. 3995–4004.
- [C40] M. Riemer, A. Vempaty, **F. P. Calmon**, F. Heath, R. Hull, and E. Khabiri, "Correcting forecasts with multifactor neural attention," in *Proc. International Conference on Machine Learning (ICML)*, June 2016.
- [C41] J. Liao, L. Sankar, V. Y. F. Tan, and **F. P. Calmon**, "Hypothesis testing in the high privacy limit," in *Proc. 54th Annual Allerton Conference on Communication, Control, and Computing*, 2016.
- [C42] A. Makhdoumi, **F. P. Calmon**, and M. Médard, "Forgot your password: Correlation dilution," *Proc. IEEE Int. Symp. on Inf. Theory (ISIT)*, pp. 2944–2948, 2015.
- [C43] **F. P. Calmon**, A. Makhdoumi, and M. Médard, "Fundamental limits of perfect privacy," *Proc. IEEE Int. Symp. on Inf. Theory (ISIT)*, pp. 1796–1800, 2015.
- [C44] **F. P. Calmon**, Y. Polyanskiy, and Y. Wu, "Strong. data processing inequalities in power-constrained Gaussian channels." *Proc. IEEE Int. Symp. on Inf. Theory (ISIT)*, pp. 2558–2562, 2015.
- [C45] **F. P. Calmon**, M. Varia, and M. Médard, "An exploration of the role of principal inertia components in information theory," in *Proc. IEEE Inf. Theory Workshop*, Nov. 2014.
- [C46] —, "On information-theoretic metrics for symmetric-key encryption and privacy," in *Proc. 52nd Annual Allerton Conference on Communication, Control, and Computing*, 2014.

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