

Héber H. Arcolezi, Ph.D.

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Professional Experience

- Feb 2026 – **Assistant Professor**, ÉTS Montréal, Canada.
- Oct 2023 – Jan 2026 **Tenured Research Scientist (ISFP)¹**, Inria Grenoble, France.
- Feb 2022 – Sept 2023 **Postdoctoral Researcher**, Inria Saclay & École Polytechnique, France.

Education

- Jun 2019 – Jan 2022 **Ph.D. in Computer Science**, Université Bourgogne Franche-Comté (UBFC)
Thesis title: *Production of Categorical Data Verifying Differential Privacy: Conception and Applications to Machine Learning* [link]
Advisors: Jean-François Couchot, Bechara Al Bouna, and Xiaokui Xiao
- Sep 2017 – Aug 2019 **M.Sc. in Electrical Engineering**, São Paulo State University (UNESP)
Thesis title: *A Novel Robust and Intelligent Control Based Approach for Human Lower Limb Rehabilitation via Neuromuscular Electrical Stimulation* [link]
Advisor: Aparecido A. de Carvalho
- Jul 2012 – Aug 2017 **B.Eng. in Electrical Engineering**, Mato Grosso State University (UNEMAT)
Thesis title: *Um Estudo Complementar ao Projeto de Controle PID no Caso do Pêndulo Invertido (in Portuguese)* [link]
Advisor: Rogério B. Quirino

Publications

Journal Articles

- 1 **H. H. Arcolezi**, K. Makhlof, and C. Palamidessi, “Group fairness under obfuscated sensitive information,” *Journal of Computer Security*, vol. 33, no. 4, pp. 239–260, May 2025, ISSN: 1875-8924. ⚡ doi: 10.1177/0926227x251330212.
- 2 **H. H. Arcolezi** and S. Gambs, “Revealing the true cost of locally differentially private protocols: An auditing perspective,” *Proceedings on Privacy Enhancing Technologies*, vol. 2024, no. 4, pp. 123–141, 2024. ⚡ doi: 10.56553/popets-2024-0110.
- 3 K. Makhlof, **H. H. Arcolezi**, S. Zhioua, G. B. Brahim, and C. Palamidessi, “On the impact of multi-dimensional local differential privacy on fairness,” *Data Mining and Knowledge Discovery*, May 2024, ISSN: 1573-756X. ⚡ doi: 10.1007/s10618-024-01031-0.
- 4 **H. H. Arcolezi**, S. Gambs, J.-F. Couchot, and C. Palamidessi, “On the risks of collecting multidimensional data under local differential privacy,” *Proc. VLDB Endow.*, vol. 16, no. 5, pp. 1126–1139, Jan. 2023, ISSN: 2150-8097. ⚡ doi: 10.14778/3579075.3579086.
- 5 **H. H. Arcolezi**, S. Cerna, J.-F. Couchot, C. Guyeux, and A. Makhoul, “Privacy-preserving prediction of victim’s mortality and their need for transportation to health facilities,” *IEEE Transactions on Industrial Informatics*, vol. 18, no. 8, pp. 5592–5599, 2022. ⚡ doi: 10.1109/TII.2021.3123588.
- 6 **H. H. Arcolezi**, J.-F. Couchot, B. A. Bouna, and X. Xiao, “Improving the utility of locally differentially private protocols for longitudinal and multidimensional frequency estimates,” *Digital Communications and Networks*, Jul. 2022. ⚡ doi: 10.1016/j.dcan.2022.07.003.

¹Inria ISFP researchers have a light teaching load, ranging from approximately 32 to 64 hours per year. More information at <https://www.inria.fr/fr/inria-starting-faculty-position-isfp>.

- 7 H. H. Arcolezi, J.-F. Couchot, D. Renaud, B. Al Bouna, and X. Xiao, "Differentially private multivariate time series forecasting of aggregated human mobility with deep learning: Input or gradient perturbation?" *Neural Computing and Applications*, vol. 34, no. 16, pp. 13 355–13 369, Jun. 2022, ISSN: 1433-3058. DOI: 10.1007/s00521-022-07393-0.
- 8 H. H. Arcolezi, S. Cerna, C. Guyeux, and J.-F. Couchot, "Preserving geo-indistinguishability of the emergency scene to predict ambulance response time," *Mathematical and Computational Applications*, vol. 26, no. 3, p. 56, Aug. 2021, ISSN: 2297-8747. DOI: 10.3390/mca26030056.
- 9 H. H. Arcolezi, W. R. Nunes, R. A. de Araujo, et al., "Rise controller tuning and system identification through machine learning for human lower limb rehabilitation via neuromuscular electrical stimulation," *Engineering Applications of Artificial Intelligence*, vol. 102, p. 104 294, Jun. 2021, ISSN: 0952-1976. DOI: 10.1016/j.engappai.2021.104294.
- 10 S. Cerna, H. H. Arcolezi, C. Guyeux, G. Royer-Fey, and C. Chevallier, "Machine learning-based forecasting of firemen ambulances' turnaround time in hospitals, considering the covid-19 impact," *Applied Soft Computing*, vol. 109, p. 107 561, Sep. 2021, ISSN: 1568-4946. DOI: 10.1016/j.asoc.2021.107561.
- 11 H. H. Arcolezi, J.-F. Couchot, S. Cerna, et al., "Forecasting the number of firefighter interventions per region with local-differential-privacy-based data," *Computers & Security*, vol. 96, p. 101 888, Sep. 2020, ISSN: 0167-4048. DOI: 10.1016/j.cose.2020.101888.
- 12 H. H. Arcolezi, W. R. B. M. Nunes, S. Cerna, et al., "Identifying the knee joint angular position under neuromuscular electrical stimulation via long short-term memory neural networks," *Research on Biomedical Engineering*, vol. 36, no. 4, pp. 511–526, Sep. 2020, ISSN: 2446-4740. DOI: 10.1007/s42600-020-00089-1.

Conference Proceedings

- 1 H. H. Arcolezi, M. Alishahi, A.-A. Bendoukha, and N. Kaaniche, "Fair play for individuals, foul play for groups? auditing anonymization's impact on ml fairness," in *ECAI 2025*, IOS Press, Oct. 2025. DOI: 10.3233/faia250909.
- 2 A.-A. Bendoukha, H. H. Arcolezi, N. Kaaniche, A. Boudguiga, R. Sirdey, and P.-E. Clet, "Fade: Federated aggregation with discrimination elimination," in *Proceedings of the 2025 ACM Conference on Fairness, Accountability, and Transparency*, ser. FAccT '25, Association for Computing Machinery, 2025, pp. 3182–3195, ISBN: 9798400714825. DOI: 10.1145/3715275.3732203.
- 3 C. Eichler, N. Champeil, N. Anciaux, A. Bensamoun, H. H. Arcolezi, and J. M. De Fuentes, "Nob-MIAs: Non-biased membership inference attacks assessment on large language models with ex-post dataset construction," in *Web Information Systems Engineering – WISE 2024*, Singapore: Springer Nature Singapore, 2025, pp. 441–456. DOI: 10.1007/978-981-96-0570-5_32.
- 4 H. Zhang, A. K. Mishra, and H. H. Arcolezi, "Demo: Exploring utility and attackability trade-offs in local differential privacy," in *Proceedings of the 2025 ACM SIGSAC Conference on Computer and Communications Security*, ser. CCS '25, Taipei, Taiwan: Association for Computing Machinery, 2025, pp. 4728–4730. DOI: 10.1145/3719027.3760706.
- 5 R. Binkyte, C. A. Pinzón, S. Lestyán, K. Jung, H. H. Arcolezi, and C. Palamidessi, "Causal discovery under local privacy," in *Proceedings of the Third Conference on Causal Learning and Reasoning*, F. Locatello and V. Didelez, Eds., ser. Proceedings of Machine Learning Research, vol. 236, PMLR, Jan. 2024, pp. 325–383. URL: <https://proceedings.mlr.press/v236/binkyte24a.html>.
- 6 K. Makhlof, T. Stefanović, H. H. Arcolezi, and C. Palamidessi, "A systematic and formal study of the impact of local differential privacy on fairness: Preliminary results," in *2024 IEEE 37th Computer Security Foundations Symposium (CSF)*, 2024, pp. 1–16. DOI: 10.1109/CSF61375.2024.00039.

- 7 **H. H. Arcolezi**, S. Cerna, and C. Palamidessi, “On the utility gain of iterative bayesian update for locally differentially private mechanisms,” in *Data and Applications Security and Privacy XXXVII*, Springer Nature Switzerland, 2023, pp. 165–183, ISBN: 9783031375866.  doi: 10.1007/978-3-031-37586-6_11.
- 8 **H. H. Arcolezi**, K. Makhlof, and C. Palamidessi, “(local) differential privacy has no disparate impact on fairness,” in *Data and Applications Security and Privacy XXXVII*, V. Atluri and A. L. Ferrara, Eds., Cham: Springer Nature Switzerland, 2023, pp. 3–21.  doi: 10.1007/978-3-031-37586-6_1.
- 9 **H. H. Arcolezi**, C. A. Pinzón, C. Palamidessi, and S. Gambs, “Frequency estimation of evolving data under local differential privacy,” in *Proceedings of the 26th International Conference on Extending Database Technology, EDBT 2023, Ioannina, Greece, March 28 - March 31, 2023*, OpenProceedings.org, 2023, pp. 512–525.  doi: 10.48786/EDBT.2023.44.
- 10 **H. H. Arcolezi**, J.-F. Couchot, S. Gambs, C. Palamidessi, and M. Zolfaghari, “Multi-freq-ldry: Multiple frequency estimation under local differential privacy in python,” in *Computer Security – ESORICS 2022*, V. Atluri, R. Di Pietro, C. D. Jensen, and W. Meng, Eds., Cham: Springer Nature Switzerland, 2022, pp. 770–775.  doi: 10.1007/978-3-031-17143-7_40.
- 11 **H. H. Arcolezi**, J.-F. Couchot, B. Al Bouna, and X. Xiao, “Random sampling plus fake data: Multidimensional frequency estimates with local differential privacy,” in *Proceedings of the 30th ACM International Conference on Information & Knowledge Management*, ACM, Oct. 2021, pp. 47–57.  doi: 10.1145/3459637.3482467.
- 12 **H. H. Arcolezi**, J.-F. Couchot, B. A. Bouna, and X. Xiao, “Longitudinal collection and analysis of mobile phone data with local differential privacy,” in *IFIP International Summer School on Privacy and Identity Management*, Springer International Publishing, 2021, pp. 40–57, ISBN: 9783030724658.  doi: 10.1007/978-3-030-72465-8_3.
- 13 **H. H. Arcolezi**, J.-F. Couchot, O. Baala, J.-M. Contet, B. Al Bouna, and X. Xiao, “Mobility modeling through mobile data: Generating an optimized and open dataset respecting privacy,” in *2020 International Wireless Communications and Mobile Computing (IWCMC)*, 2020, pp. 1689–1694.  doi: 10.1109/IWCMC48107.2020.9148138.
- 14 S. Cerna, C. Guyeux, **H. H. Arcolezi**, R. Couturier, and G. Royer, “A comparison of lstm and xgboost for predicting firemen interventions,” in *Trends and Innovations in Information Systems and Technologies*, Springer International Publishing, 2020, pp. 424–434, ISBN: 9783030456917.  doi: 10.1007/978-3-030-45691-7_39.
- 15 S. Cerna, C. Guyeux, **H. H. Arcolezi**, and G. Royer, “Boosting methods for predicting firemen interventions,” in *2020 11th International Conference on Information and Communication Systems (ICICS)*, 2020, pp. 001–006.  doi: 10.1109/ICICS49469.2020.239488.
- 16 **H. H. Arcolezi**, W. R. B. M. Nunes, S. L. C. Ñahuis, M. A. A. Sanches, M. C. M. Teixeira, and A. A. de Carvalho, “A rise-based controller fine-tuned by an improved genetic algorithm for human lower limb rehabilitation via neuromuscular electrical stimulation,” in *2019 6th International Conference on Control, Decision and Information Technologies (CoDIT)*, 2019, pp. 1197–1202.  doi: 10.1109/CoDIT.2019.8820357.
- 17 S. L. C. Ñahuis, C. Guyeux, **H. H. Arcolezi**, R. Couturier, G. Royer, and A. D. P. Lotufo, “Long short-term memory for predicting firemen interventions,” in *2019 6th International Conference on Control, Decision and Information Technologies (CoDIT)*, 2019, pp. 1132–1137.  doi: 10.1109/CoDIT.2019.8820671.

Grants

- 2025 – 2029
- **MIAI Cluster Chair: 500,000€**
Title: *Responsible AI: Design, Regulation, and Conformity (RAIDAC)*
Role: Co-Chair with Prof. Theodore Christakis
 - **ANR AAPG 2024² – JCJC (Young Researcher): 347,310€**
Title: *Aligning Privacy, Utility, and Fairness for Responsible AI (AI-PULSE)*
Role: Principal and Unique Investigator
- 2024 – 2026
- **Inria Associated Team³: 32,000€**
Title: *Algorithmic Auditing of Privacy and Fairness (AUDIT-PAIR)*
Institutions: Inria (Privatics team), UQAM, and ÉTS Montréal
Role: Principal Investigator at Inria Side
- 2023 – 2027
- **ANR AAPG 2023 – PRCE (Academic and Industry Collaboration): 338,000€**
Title: *Making PostgreSQL Differentially Private for Transparent AI (DIFPRIPOS)*
Role: Member
- 2024 – 2025
- **MIAI Open call to sustain the development and promotion of AI⁴: 10,000€**
Title: *Exploring the Interplay of Differential Privacy and Fairness in ML*
Role: Principal and Unique Investigator

Awards

- 2025
- **Notable Reviewer Award** at USENIX Security 2025
- 2024
- **Best Reviewer Award** at PETS 2024
- 2023
- **Best Paper Award** at DBSec 2023 for the paper “(Local) differential privacy has no disparate impact on fairness”
- 2021
- **Ph.D. Student Mobility Grant (2,300€)** from the University Bourgogne Franche-Comté (UBFC) to visit the Université du Québec à Montréal (UQAM)
- 2013
- **UNEMAT Scholarship (19,200R\$ – 400R\$/month)** to be a collaborator in the Formation of Cooperative Cells (FOCCO) program for 4 years (2013 – 2016)

Teaching

- Winter 2025
- **Database Management Systems**
Professional Bachelor in Networks and Telecommunication, 8h, Université Grenoble Alpes
 - **Python Programming Fundamentals**
Professional Bachelor in Networks and Telecommunication, 10h, Université Grenoble Alpes
- Spring 2024
- **Database Management Systems**
Professional Bachelor in Networks and Telecommunication, 27h, Université Grenoble Alpes
- Spring 2023
- **Introduction to Computer Science with Java**
Engineer degree and Bachelor, 40h, École Polytechnique

²Appel à Projets Générique de l'Agence Nationale de la Recherche (ANR). This is the French equivalent of the NSF CAREER award.

³This program funds mobility between Inria and an international research group for 3 years. More info at <https://www.inria.fr/sites/default/files/2023-07/Appel-Equipes-Associees-2024-2.pdf>.

⁴<https://miae.univ-grenoble-alpes.fr/research/projects-for-the-development-and-promotion-of-ai/>

Teaching (continued)

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| Spring 2022 | ■ Introduction to Computer Science with Java
Engineer degree and Bachelor, 4oh, École Polytechnique |
| Spring 2021 | ■ Privacy for IoT
Master IoT, 2oh, Université Bourgogne Franche-Comté |
| Winter 2020 | ■ Privacy for IoT
Master IoT, 2oh, Université Bourgogne Franche-Comté |

Students

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|---------------------|--|
| Jun 2025 – Aug 2025 | ■ Mohammed Amine Benrahmoune , Inria Grenoble, France
Type: Master Student (Internship)
Project Title: <i>On the Interplay of Backdoor and Differential Privacy in ML</i> |
| Fev 2025 – Sep 2025 | ■ Vinicius Gabriel Verona de Resende , Inria Grenoble, France
Type: Master Student (Internship)
Project Title: <i>Private- and Fairness-Aware Machine Learning</i> |
| Fev 2025 – Jun 2025 | ■ Annika Sauer , Inria Grenoble (France) & KIT (Germany)
Type: Master Student
Project Title: <i>Measurement of Attack Resilience of Differential Privacy</i> |
| May 2022 – Oct 2024 | ■ Karima Makhlof , Inria Saclay & École Polytechnique, France.
Type: Ph.D. Student
Co-Supervisor: Catuscia Palamidessi
Thesis Title: <i>Advancing Ethical and Responsible AI: Exploring Fairness, Privacy, and Explainability through Causal Perspectives</i> |
| Apr 2023 – Jun 2023 | ■ Tamara Stefanovic , Inria Saclay & École Polytechnique, France.
Type: Visiting Ph.D. Student
Co-Supervisor: Catuscia Palamidessi
Internship Project: <i>Sympson's Paradox Under Obfuscated Data</i> |
| Feb 2022 – Dec 2022 | ■ Majid Zolfaghari , Inria Saclay & École Polytechnique, France
Type: Visiting Ph.D. Student
Co-Supervisor: Catuscia Palamidessi
Internship Project: <i>Personalized Local Differential Privacy in Continual Reports</i> |

Services

Program Committee

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| 2026 | ■ CCS, AAAI |
| 2025 | ■ CCS, PETS, USENIX Security, ICLR |
| 2024 | ■ CCS, PETS, IJCAI, FAccT, SAC, ICLR |
| 2023 | ■ NeurIPS, FAccT, ECML PKDD, CCS, ICLR |
| 2022 | ■ ECML PKDD |

Conference & Workshop Organization

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| 2024 | ■ 14th Atelier sur la Protection de la Vie Privée ⁵ (APVP 2024), France |
| 2023 | ■ 13th Atelier sur la Protection de la Vie Privée (APVP 2023), France |
| 2022 | ■ 1st Comète Workshop on Ethical AI ⁶ , France |

⁵Translates to "Workshop on Privacy". This is the national French workshop from the privacy-preserving community GT-PVP.

⁶<https://www.lix.polytechnique.fr/ethicalai/previous/2022/>

Services (continued)

- 2017 ■ II Semana da Animação, Modelagem e Automação, Brazil
- 2014 ■ I Semana da Faculdade de Ciencias Exatas, Brazil

Talks

- 2025 ■ **Keynote Speaker:** "*Interplay of privacy and fairness in machine learning*" at 2nd Unite! Research School (URS 2025)
- **Keynote Speaker:** "*Intersections of Fairness and Privacy: A Local Differential Privacy Perspective*" at 9th GDR RSD/ASF Winter School on Distributed Systems & Networks 2025
- 2024 ■ **Invited Tutorial:** "*Securing Data with Local Differential Privacy: Concepts, Protocols, and Practical Applications*" at Selected Areas in Cryptography Summer School 2024
- 2023 ■ **Invited Talk:** "*Locally differentially private protocols for frequency estimation of longitudinal data*" at Groupe de travail Protection de la Vie Privée (GT-PVP)
- 2022 ■ **Invited Tutorial:** "*A Brief Introduction to Local Differential Privacy*" at SYSTOPIA Lab
- **Invited Talk:** "*Data anonymization and Artificial Intelligence Models (in Portuguese)*" at Hospital Risoleta Tolentino Neves (HRTN)
- 2021 ■ **Invited Talk:** "*Improving Utility and Privacy in Multidimensional Frequency Estimates Under Local Differential Privacy*" at Université du Québec à Montréal (LATECE Seminar)

Skills

- Languages ■ Strong reading, writing and speaking for English, French, Spanish, and Portuguese
- Coding ■ Python, Java, Matlab & Simulink, Visual Basic, L^AT_EX
- Databases ■ MySQL, Postgresql
- Misc. ■ Academic research, teaching, supervising, consultation, and publishing