

# Curriculum Vitae

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## Short Bio

I have been a researcher in the ASAP team at Inria Rennes Bretagne-Atlantique since 2010. I received my PhD from Politecnico di Milano in Italy in 2006; I then worked as a post-doctoral researcher both at Washington University in St. Louis (MO), and at Inria Rennes before being recruited as a permanent researcher in 2010. My research interests focus on the systemic aspects of large-scale distributed systems and more recently I have been investigating how decentralization can improve the management and analysis of large quantities of privacy-sensitive data. My contributions span diverse areas such as video streaming, recommendation systems, privacy, and social networks. I have co-supervised 4 PhD students and have been active in several national and International projects. In particular, I was an active member of the team working on Anne-Marie Kermarrec's Gossple ERC initiative, and I am currently WP leader in the O'Browser ANR project (ANR-16-CE25-0005-03).

## Current and Past Projects

- ANR O'Browser 2016 - 2021
- Profile Cominlabs LabEx Project 2015 - 2016
- ANR Socioplug 2013 - 2017
- Descent Cominlabs LabEx Project 2013 - 2016
- Inria Brow2Brow ADT 2014-2015
- EIT/ICT-Labs AllYours 2013-2014

- contributor to Anne-Marie Kaerमारrec’s Gossple ERC. 2008-2012
- Solipsis 2007-2008

## Current and Previous Positions

1. November 2010 - now.  
Research Scientist (CR1 and then CRCN) in the ASAP team at INRIA Rennes-Bretagne Atlantique, IRISA lab.
2. November 2007 - 2010.  
Postdoc Researcher with the ASAP team at INRIA Rennes-Bretagne Atlantique.  
Position supported through (ANR-RIAM) Solipsis project  
Director of Research Program: Anne-Marie Kermarrec
3. July 2006 - July 2007.  
Postdoc (Visiting Researcher) in the MobiLab.  
Department of Computer Science and Engineering.  
Washington University in St Louis, MO, USA. Position supported by Office of Naval Research under MURI research contract N00014-02-1-0715.  
Director of Research Program: Prof. Dr. Gruia-Catalin Roman
4. March 2003 - May 2006.  
Ph.D. Student in Computer Science and Engineering at Dipartimento di Elettronica e Informazione, Politecnico di Milano, Italy, under the supervision of Prof. Gian Pietro Picco.

## Recent Invited Talks (2016-17)

- Invited (Keynote) talk at the W-PSDS workshop co-located with SRDS 2016 in Budapest, Hungary, on September 26, 2016.
- Invited talk at the SG-2 meeting of the BDVA Summit in Valencia, Spain, on December 1, 2016.
- Invited talk at the “demi-journee Big Data” in Paris on January 6, 2017.
- Invited talk at the WOS7 workshop at Technicolor, on November 30, 2017.

## Program Commitees

- PC member of Middleware, P2P, IPDPS, ICDCS, SSS, DAIS, HiPC, EDCC, VTC.
- Program co-chair for ICDCN 2013.
- Co-chair of SNS 2012, SNDS 2010.
- Workshop co-chair at Middleware 2014.

## Other activities within Inria

- I have been scientific correspondent for H2020 projects at Inria since 2013.
- I have been a member of the COST-GTRI at Inria since 2016.

## Teaching

I am a teacher for the following courses.

- Scalable Distributed Systems, EIT/ICT Labs Master School, Univ. Rennes, France.
- Big-Data Storage and Processing Infrastructures, M2-SIF, Univ. Rennes, France.
- Cloud Computing: M2-Miage, Univ. Rennes, France.
- Techniques Logiciel pour le Cloud (Software techniques for the Cloud), M2 Alternance, Univ. Rennes, France
- Distributed Systems, 3rd year (M2) ENSAI, Ker-Lann, France.

## Complete List of Publications

### Journal articles

- [1] Borzou Rostami, Andr Chassein, Michael Hopf, Davide Frey, Christoph Buchheim, Federico Malucelli, and Marc Goerigk. “The quadratic shortest path problem: complexity, approximability, and solution methods”. In: *European Journal of Operational Research* 268.2 (2018), pp. 473–485. ISSN: 0377-2217. DOI: <https://doi.org/10.1016/j.ejor.2018.01.054>. URL: <http://www.sciencedirect.com/science/article/pii/S0377221718300900>.
- [2] Brice Nédelec, Julian Tanke, Pascal Molli, Achour Mostefaoui, and Davide Frey. “An Adaptive Peer-Sampling Protocol for Building Networks of Browsers”. In: *World Wide Web* 25 (2017), p. 1678. DOI: 10.1007/s11280-017-0478-5. URL: <https://hal.inria.fr/hal-01619906>.
- [3] Antoine Boutet, Davide Frey, Rachid Guerraoui, Arnaud Jégou, and Anne-Marie Kermarrec. “Privacy-Preserving Distributed Collaborative Filtering”. In: *Computing*. Special Issue on NETYS 2014 98.8 (Aug. 2016), pp. 827–846. DOI: 10.1007/s00607-015-0451-z. URL: <https://hal.inria.fr/hal-01251314>.
- [4] Antoine Boutet, Davide Frey, Arnaud Jégou, Anne-Marie Kermarrec, and Heverson Ribeiro. “FreeRec: an Anonymous and Distributed Personalization Architecture”. In: *Computing* (Dec. 2013). URL: <https://hal.inria.fr/hal-00909127>.
- [5] Davide Frey, Arnaud Jégou, Anne-Marie Kermarrec, Michel Raynal, and Julien Stainer. “Trust-Aware Peer Sampling: Performance and Privacy Tradeoffs”. In: *Theoretical Computer Science* (Feb. 2013). URL: <https://hal.inria.fr/hal-00872996>.

## Conferences and Workshops

- [6] Tristan Allard, Davide Frey, George Giakkoupis, and Julien Lepiller. “Lightweight Privacy-Preserving Averaging for the Internet of Things”. In: *M4IOT 2016 - 3rd Workshop on Middleware for Context-Aware Applications in the IoT*. Trento, Italy: ACM, Dec. 2016, pp. 19–22. DOI: 10.1145/3008631.3008635. URL: <https://hal.inria.fr/hal-01421986>.
- [7] Stéphane Delbruel, Davide Frey, and François Taïani. “Exploring The Use of Tags for Georeplicated Content Placement”. In: *IEEE IC2E’16*. Berlin, Germany, Apr. 2016, pp. 172–181. DOI: 10.1109/IC2E.2016.37. URL: <https://hal.inria.fr/hal-01257939>.
- [8] Stéphane Delbruel, Davide Frey, and François Taïani. “Mignon: A Fast Decentralized Content Consumption Estimation in Large-Scale Distributed Systems”. In: *16th IFIP WG 6.1 International Conference on Distributed Applications and Interoperable Systems (DAIS)*. Ed. by Márk Jelasity and Evangelia Kalyvianaki. Vol. LNCS-9687. Distributed Applications and Interoperable Systems. Heraklion, Greece: Springer, June 2016, pp. 32–46. DOI: 10.1007/978-3-319-39577-7\_3. URL: <https://hal.inria.fr/hal-01301230>.
- [9] Davide Frey, Marc X. Makkes, Pierre-Louis Roman, François Taïani, and Spyros Voulgaris. “Bringing secure Bitcoin transactions to your smartphone”. In: *Proceedings of the 15th International Workshop on Adaptive and Reflective Middleware (ARM 2016)*. Trento, Italy: ACM, Dec. 2016, 3:1–3:6. DOI: 10.1145/3008167.3008170. URL: <https://hal.inria.fr/hal-01384461>.
- [10] Davide Frey, Achour Mostefaoui, Matthieu Perrin, Pierre-Louis Roman, and François Taïani. “Speed for the elite, consistency for the masses: differentiating eventual consistency in large-scale distributed systems”. In: *Proceedings of the 2016 IEEE 35th Symposium on Reliable Distributed Systems (SRDS 2016)*. Budapest, Hungary: IEEE Computer Society, Sept. 2016, pp. 197–206. DOI: 10.1109/SRDS.2016.032. URL: <https://hal.inria.fr/hal-01344138>.
- [11] Hicham Lakhlef, Davide Frey, and Michel Raynal. “Optimal Collision/Conflict-Free Distance-2 Coloring in Wireless Synchronous Broadcast/Receive Tree Networks”. In: *45th International Conference on Parallel Processing*. Philadelphia, PA, United States, Aug. 2016, pp. 350–359. DOI: 10.1109/ICPP.2016.47. URL: <https://hal.archives-ouvertes.fr/hal-01396940>.
- [12] Antoine Boutet, Davide Frey, Rachid Guerraoui, Anne-Marie Kermarrec, Antoine Rault, François Taïani, and Jingjing Wang. “Hide & Share: Landmark-based Similarity for Private KNN Computation”. In: *45th Annual IEEE/IFIP International Conference on Dependable Systems and Networks (DSN)*. Rio de Janeiro, Brazil, June 2015, pp. 263–274. DOI: 10.1109/DSN.2015.60. URL: <https://hal.archives-ouvertes.fr/hal-01171492>.
- [13] Raziel Carvajal-Gomez, Davide Frey, Matthieu Simonin, and Anne-Marie Kermarrec. “WebGC Gossiping on Browsers Without a Server [Live Demo/Poster]”. In: *Web Information Systems Engineering - WISE 2015 - 16th International Conference, Miami, FL, USA, November 1-3, 2015, Proceedings, Part II*. Ed. by Jianyong Wang, Wojciech Cellary, Dingding Wang, Hua Wang, Shu-Ching Chen, Tao Li, and Yanchun Zhang. Vol. 9419. Lecture Notes in Computer Science. Springer, 2015, pp. 332–336. ISBN: 978-

- 3-319-26186-7. DOI: 10.1007/978-3-319-26187-4\_31. URL: [https://doi.org/10.1007/978-3-319-26187-4\\_31](https://doi.org/10.1007/978-3-319-26187-4_31).
- [14] Stéphane Delbruel, Davide Frey, and François Taïani. “Decentralized view prediction for global content placement”. In: *Middleware 2015 : ARM Workshop*. Vancouver, Canada, Dec. 2015. DOI: 10.1145/2834965.2834974. URL: <https://hal.inria.fr/hal-01247159>.
- [15] Davide Frey, Rachid Guerraoui, Anne-Marie Kermarrec, and Antoine Rault. “Collaborative Filtering Under a Sybil Attack: Analysis of a Privacy Threat”. In: *Eighth European Workshop on System Security EuroSec 2015*. Bordeaux, France, Apr. 2015. DOI: 10.1145/2751323.2751328. URL: <https://hal.inria.fr/hal-01158723>.
- [16] Davide Frey, Anne-Marie Kermarrec, Christopher Maddock, Andreas Mauthe, Pierre-Louis Roman, and François Taïani. “Similitude: Decentralised Adaptation in Large-Scale P2P Recommenders”. In: *15th IFIP International Conference on Distributed Applications and Interoperable Systems (DAIS)*. Ed. by Alysson Bessani and Sara Bouchenak. Vol. LNCS-9038. Distributed Applications and Interoperable Systems. Grenoble, France: Springer International Publishing, June 2015, pp. 51–65. DOI: 10.1007/978-3-319-19129-4\_5. URL: <https://hal.inria.fr/hal-01138365>.
- [17] Borzou Rostami, Federico Malucelli, Davide Frey, and Christoph Buchheim. “On the Quadratic Shortest Path Problem”. In: *14th International Symposium on Experimental Algorithms*. 14th International Symposium on Experimental Algorithms. Paris, France, June 2015. DOI: 10.1007/978-3-319-20086-6\_29. URL: <https://hal.inria.fr/hal-01251438>.
- [19] Antoine Boutet, Davide Frey, Rachid Guerraoui, Arnaud Jégou, and Anne-Marie Kermarrec. “Privacy-Preserving Distributed Collaborative Filtering”. In: *NETYS*. Marrakech, Morocco, May 2014, pp. 169–184. DOI: 10.1007/978-3-319-09581-3\_12. URL: <https://hal.inria.fr/hal-00975137>.
- [18] Antoine Boutet, Davide Frey, Rachid Guerraoui, Anne-Marie Kermarrec, and Rihicheek Patra. “HyRec: Leveraging Browsers for Scalable Recommenders”. In: *Middleware 2014*. Bordeaux, France, Dec. 2014, pp. 85–96. DOI: 10.1145/2663165.2663315. URL: <https://hal.inria.fr/hal-01080016>.
- [20] Raziel Carvajal-Gómez, Davide Frey, Matthieu Simonin, and Anne-Marie Kermarrec. “WebGC: Browser-Based Gossiping [Live Demo/Poster]”. In: *Proceedings of the Middleware '14 Posters & Demos Session, Bordeaux, France, December 8-12, 2014*. Poster. Dec. 2014, pp. 13–14. DOI: 10.1145/2678508.2678515. URL: <https://hal.inria.fr/hal-01080032>.
- [21] Davide Frey, Mathieu Goessens, and Anne-Marie Kermarrec. “Behave: Behavioral Cache for Web Content”. In: *4th International Conference on Distributed Applications and Interoperable Systems (DAIS)*. Ed. by Kostas Magoutis and Peter Pietzuch. Vol. LNCS 8460. Lecture Notes in Computer Science. Berlin, Germany: Springer, June 2014, pp. 89–103. DOI: 10.1007/978-3-662-43352-2\_8. URL: <https://hal.inria.fr/hal-01079976>.

- [22] Davide Frey, Anne-Marie Kermarrec, Christopher Maddock, Andreas Mauthe, and François Taïani. “Adaptation for the Masses: Towards Decentralized Adaptation in Large-Scale P2P Recommenders”. In: *Workshop on Adaptive and Reflective Middleware ARM 2014*. Bordeaux, France, Dec. 2014, 4:1–4:6. DOI: 10.1145/2677017.2677021. URL: <https://hal.inria.fr/hal-01080030>.
- [24] Antoine Boutet, Davide Frey, Rachid Guerraoui, Arnaud Jégou, and Anne-Marie Kermarrec. “WhatsUp Decentralized Instant News Recommender”. In: *IPDPS 2013*. Boston, United States, May 2013. URL: <https://hal.inria.fr/hal-00769291>.
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- [25] Davide Frey, Anne-Marie Kermarrec, and Konstantinos Kloudas. “Probabilistic Deduplication for Cluster-Based Storage Systems”. In: *ACM Symposium on Cloud Computing*. San Jose, CA, United States, Oct. 2012, p. 17. DOI: 10.1145/2391229.2391246. URL: <https://hal.inria.fr/hal-00728215>.
- [26] Davide Frey, Arnaud Jégou, and Anne-Marie Kermarrec. “Social Market: Combining Explicit and Implicit Social Networks”. In: *International Symposium on Stabilization, Safety, and Security of Distributed Systems*. Grenoble, France: LNCS, Oct. 2011, pp. 193–207. DOI: 10.1007/978-3-642-24550-3\_16. URL: <https://hal.inria.fr/inria-00624129>.
- [27] Marin Bertier, Davide Frey, Rachid Guerraoui, Anne-Marie Kermarrec, and Vincent Leroy. “The Gossple Anonymous Social Network”. In: *ACM/IFIP/USENIX 11th International Middleware Conference (MIDDLEWARE)*. Ed. by Indranil Gupta; Cecilia Mascolo. Vol. LNCS-6452. Middleware 2010. Bangalore, India: Springer, Nov. 2010, pp. 191–211. DOI: 10.1007/978-3-642-16955-7\_10. URL: <https://hal.inria.fr/inria-00515693>.
- [28] Antoine Boutet, Davide Frey, Rachid Guerraoui, and Anne-Marie Kermarrec. “WhatsUp: news from, for, through everyone”. In: *10th IEEE International Conference on Peer-to-Peer Computing (IEEE P2P’10)*. Delft, Netherlands, Aug. 2010, pp. 1–2. DOI: 10.1109/P2P.2010.5569981. URL: <https://hal.inria.fr/inria-00515420>.
- [29] Davide Frey, Rachid Guerraoui, Anne-Marie Kermarrec, and Maxime Monod. “Boosting Gossip for Live Streaming”. In: *P2P 2010*. Delft, Netherlands, Aug. 2010, pp. 1–10. DOI: 10.1109/P2P.2010.5569962. URL: <https://hal.inria.fr/inria-00517384>.
- [30] Davide Frey, Rachid Guerraoui, Anne-Marie Kermarrec, Maxime Monod, Koldehofe Boris, Mogensen Martin, and Vivien Quéma. “Heterogeneous Gossip”. In: *Middleware 2009*. Urbana-Champaign, IL, United States, Dec. 2009, pp. 42–61. DOI: 10.1007/978-3-642-10445-9\_3. URL: <https://hal.inria.fr/inria-00436125>.
- [31] Davide Frey, Rachid Guerraoui, Anne-Marie Kermarrec, Maxime Monod, and Vivien Quéma. “Stretching Gossip with Live Streaming”. In: *DSN 2009*. Estoril, Portugal, June 2009, pp. 259–264. DOI: 10.1109/DSN.2009.5270330. URL: <https://hal.inria.fr/inria-00436130>.

- [32] Davide Frey and Amy L. Murphy. “Failure-Tolerant Overlay Trees for Large-Scale Dynamic Networks”. In: *8th International Conference on Peer-to-Peer Computing 2008 (P2P’08)*. Aachen, Germany, Sept. 2008, pp. 351–361. DOI: 10.1109/P2P.2008.30. URL: <https://hal.inria.fr/inria-00337054>.
- [33] Davide Frey, Jérôme Royan, Romain Piegay, Anne-Marie Kermarrec, Emmanuelle Anceaume, and Fabrice Le Fessant. “Solipsis: A Decentralized Architecture for Virtual Environments”. In: *1st International Workshop on Massively Multiuser Virtual Environments*. Reno, NV, United States, Mar. 2008. URL: <https://hal.inria.fr/inria-00337057>.
- [34] Davide Frey and Gruiia-Catalin Roman. “Context-Aware Publish Subscribe in Mobile ad Hoc Networks”. In: *Coordination*. Paphos, Cyprus, June 2007, pp. 37–55. DOI: 10.1007/978-3-540-72794-1\_3. URL: <https://hal.inria.fr/hal-00739641>.
- [35] Paolo Costa, Davide Frey, Matteo Migliavacca, and Luca Mottola. “Towards lightweight information dissemination in inter-vehicular networks”. In: *Proceedings of the Third International Workshop on Vehicular Ad Hoc Networks, VANET 2006, Los Angeles, CA, USA, September 29, 2006*. 2006, pp. 20–29. DOI: 10.1145/1161064.1161069. URL: <http://doi.acm.org/10.1145/1161064.1161069>.
- [36] Davide Sormani, Gabriele Turconi, Paolo Costa, Davide Frey, Matteo Migliavacca, and Luca Mottola. “Towards lightweight information dissemination in inter-vehicular networks”. In: *Proceedings of the 3rd international workshop on Vehicular ad hoc networks*. Los Angeles, United States, Sept. 2006. URL: <https://hal.inria.fr/hal-00739632>.
- [37] Davide Frey and Costa Paolo. “Publish-subscribe tree maintenance over a DHT”. In: *DEBS 2005 Workshop colocated with ICDCS*. Columbus, OHIO, United States, June 2005. URL: <https://hal.inria.fr/hal-00739617>.
- [38] Gianpaolo Cugola, Davide Frey, Amy L. Murphy, and Gian Pietro Picco. “Minimizing the Reconfiguration Overhead in Content-Based Publish-Subscribe”. In: *Symposium on Applied Computing*. Nicosia, Cyprus, Mar. 2004. URL: <https://hal.inria.fr/hal-00739607>.