

Bertrand SIMON

Education and positions

- since 2020 **CNRS researcher (CRCN)**, IN2P3 Computing Center, Villeurbanne (France).
- 2018-2020 **Postdoctoral researcher**, University of Bremen (Germany).
- 2015 – 2018 **PhD in computer science**, LIP laboratory - ROMA team - École Normale Supérieure de Lyon, “Scheduling task graphs on modern computing platforms”, directed by Dr. Frédéric Vivien and Dr. Loris Marchal, defended on July 4, 2018.
- 2012 – 2014 **Master in theoretical computer science**, ENS de Lyon, with High Honors.
- 2011 – 2012 **B.Sc. in theoretical computer science**, ENS de Lyon, with Highest Honors.

Supervision

- 2019-2020 Alexander Lindermayr (Master thesis, cosupervised with Nicole Megow)
- 2019-2020 Ole Fischer (Bachelor thesis, cosupervised with Nicole Megow)
- spring 2018 Ali Al Zoobi (M2, 5 months, cosupervised with Loris Marchal)
- summer 2017 Hanna Nagy (Undergraduate, 2 months, cosupervised with Loris Marchal and Frédéric Vivien)

Research visits and internships

- 2015 **Visiting scholar**, 5 months, Stony Brook University (NY, United States), advisor Dr. M. Bender.
- 2014 **Intern**, 5 months, ENS Lyon, LIP, ROMA team, supervisors Dr. L. Marchal and Dr. F. Vivien, “Scheduling malleable task trees on hybrid platforms”.
- 2014 **Intern**, 5 months, ENS Lyon, LIP, ROMA team, supervisors Dr. L. Marchal and Dr. F. Vivien, “Scheduling malleable task trees”.
- summer 2013 **Intern**, 3 months, Concordia University, Montreal (Canada), supervisor Prof. B. Jaumard, “Deadlock avoidance in train scheduling simulation”.
- summer 2012 **Intern**, 6 weeks, INRIA Sophia-Antipolis, France, STARS team, supervisor Dr. G. Charpiat, “Gesture recognition and dynamics of an articulated movement”.

Teaching experience

- 2020 **Algorithms under uncertainty**, University of Bremen, Master (15h).
- 2017-2018 **Practice sessions of concurrent programming**, Université Lyon 1, L3 (32h).
Co-supervision of a Programming Project, ENS de Lyon, L3 (32h).
- 2016-2017 **Tutorials of Probabilities**, ENS de Lyon, L3 (32h).
Co-supervision of a Programming Project, ENS de Lyon, L3 (32h).
- 2015-2016 **Tutorials of Performance Evaluation and Networks**, ENS de Lyon, M1 (28h).
Tutorials of Optimisation and Approximation, ENS de Lyon, M1 (24h).
Tutorials of Architecture, Systems and Networks, ENS de Lyon, L3 (4h).

Scientific Production

– authors are listed in alphabetical order, except for [J1,C1,W2]

Thesis

- [T1] Bertrand SIMON. “Scheduling Task Graphs on Modern Computing Platforms”. PhD thesis. Université de Lyon, 2018.

Journal articles

- [J1] Bertrand SIMON, Brigitte JAUMARD, and Thai Hoa LE. “Deadlock Avoidance and Detection In Railway Simulation Systems”. In: *Transportation Research Record: Journal of the Transportation Research Board* 2448 (2014).
- [J2] Loris MARCHAL, Bertrand SIMON, Oliver SINNEN, and Frédéric VIVIEN. “Malleable Task-graph Scheduling with a Practical Speed-up Model”. In: *IEEE Transactions on Parallel and Distributed Systems* (2018).
- [J3] Louis-Claude CANON, Loris MARCHAL, Bertrand SIMON, and Frédéric VIVIEN. “Online Scheduling of Task Graphs on Heterogeneous Platforms”. In: *IEEE Transactions on Parallel and Distributed Systems* (2019).
- [J4] Loris MARCHAL, Bertrand SIMON, and Frédéric VIVIEN. “Limiting the Memory Footprint when Dynamically Scheduling DAGs on Shared-Memory Platforms”. In: *Journal of Parallel and Distributed Computing* (2019).
- [J5] Olivier BEAUMONT, Louis-Claude CANON, Lionel EYRAUD-DUBOIS, Giorgio LUCARELLI, Loris MARCHAL, Clément MOMMESSIN, Bertrand SIMON, and Denis TRYSTRAM. “Scheduling on Two Types of Resources: a Survey”. In: *ACM Computing Surveys* (2020).
- [J6] Martin BÖHM and Bertrand SIMON. “Discovering and Certifying Lower Bounds for the Online Bin Stretching Problem”. In: *Theoretical Computer Science (TCS)* (2022).
- [J7] Loris MARCHAL, Samuel MCCAULEY, Bertrand SIMON, and Frédéric VIVIEN. “Minimizing I/Os in Out-of-Core Task Tree Scheduling”. In: *International Journal of Foundations of Computer Science (IJFCS)* (2022).
- [J8] Franziska EBERLE, Ruben HOEKSMAS, Nicole MEGOW, Lukas NÖLKE, Kevin SCHEWIOR, and Bertrand SIMON. “Speed-Robust Scheduling - Sand, Bricks, and Rocks”. In: *Mathematical Programming (MAPR)* (2022).
- [J9] Martin BÖHM, Ruben HOEKSMAS, Nicole MEGOW, Lukas NÖLKE, and Bertrand SIMON. “On Hop-Constrained Steiner Trees in Tree-Like Metrics”. In: *SIAM Journal of Discrete Math (SIDMA)* (2022).
- [J10] Antonios ANTONIADIS, Christian COESTER, Marek ELIAS, Adam POLAK, and Bertrand SIMON. “Online Metric Algorithms with Untrusted Predictions”. In: *ACM Transactions on Algorithms (TALG)* (2023).

Conference proceedings

- [C1] Bertrand SIMON, Brigitte JAUMARD, and Thai Hoa LE. “Deadlock Avoidance and Detection in Railway Simulation Systems”. In: *Joint Rail Conference*. American Society of Mechanical Engineers. 2014.
- [C2] Abdou GUERMOUCHE, Loris MARCHAL, Bertrand SIMON, and Frédéric VIVIEN. “Scheduling Trees of Malleable Tasks for Sparse Linear Algebra”. In: *European Conference on Parallel Processing (Euro-Par)*. 2015.
- [C3] Michael A. BENDER, Jon BERRY, Rob JOHNSON, Thomas M. KROEGER, Samuel MCCAULEY, Cynthia A. PHILLIPS, Bertrand SIMON, Shikha SINGH, and David ZAGE. “Anti-Persistence on Persistent Storage: History-Independent Sparse Tables and Dictionaries”. In: *Proceedings of the Thirty-Fifth Symposium on Principles of Database Systems (PODS)*. 2016.

- [C4] Michael A. BENDER, Samuel MCCAULEY, Bertrand SIMON, Shikha SINGH, and Frédéric VIVIEN. “Resource Optimization for Program Committee Members: A Subreview Article”. In: *Fun with Algorithms (FUN)*. 2016.
- [C5] Michael A. BENDER, Rezaul CHOWDHURY, Alex CONWAY, Martin FARACH-COLTON, Pramod GANAPATHI, Rob JOHNSON, Samuel MCCAULEY, Bertrand SIMON, and Shikha SINGH. “The I/O Complexity of Computing Prime Tables”. In: *12th Latin American Theoretical Informatics Symposium (LATIN)*. 2016.
- [C6] Louis-Claude CANON, Loris MARCHAL, Bertrand SIMON, and Frédéric VIVIEN. “Online Scheduling of Sequential Task Graphs on Hybrid Platforms”. In: *European Conference on Parallel Processing (Euro-Par)*. 2018.
- [C7] Loris MARCHAL, Hanna NAGY, Bertrand SIMON, and Frédéric VIVIEN. “Parallel Scheduling of DAGs under Memory Constraints”. In: *IPDPS 2018-32st IEEE International Parallel & Distributed Processing Symposium*. 2018.
- [C8] Martin BÖHM, Ruben HOEKSMa, Nicole MEGOW, Lukas NÖLKE, and Bertrand SIMON. “Computing a Minimum-Cost k-hop Steiner Tree in Tree-Like Metrics”. In: *45th International Symposium on Mathematical Foundations of Computer Science (MFCS)*. 2020.
- [C9] Antonios ANTONIADIS, Christian COESTER, Marek ELIAS, Adam POLAK, and Bertrand SIMON. “Online Metric Algorithms with Untrusted Predictions”. In: *37th International Conference on Machine Learning (ICML)*. 2020.
- [C10] Vincent FAGNON, Imed KACEM, Giorgio LUCARELLI, and Bertrand SIMON. “Scheduling on Hybrid Platforms: Improved Approximability Window”. In: *14th Latin American Theoretical Informatics Symposium (LATIN)*. 2020.
- [C11] Antonios ANTONIADIS, Christian COESTER, Marek ELIAS, Adam POLAK, and Bertrand SIMON. “Learning-Augmented Dynamic Power Management with Multiple States via New Ski Rental Bounds”. In: *35th Conference on Neural Information Processing Systems (NeurIPS)*. 2021.
- [C12] Franziska EBERLE, Nicole MEGOW, Lukas NÖLKE, Bertrand SIMON, and Andreas WIESE. “Fully Dynamic Algorithms for Knapsack Problems with Polylogarithmic Update Time”. In: *41st IARCS Annual Conference on Foundations of Software Technology and Theoretical Computer Science (FSTTCS)*. 2021.
- [C13] Franziska EBERLE, Ruben HOEKSMa, Nicole MEGOW, Lukas NÖLKE, Kevin SCHEWIOR, and Bertrand SIMON. “Speed-Robust Scheduling”. In: *22nd Conference on Integer Programming and Combinatorial Optimization (IPCO)*. 2021.
- [C14] Valentin HONORÉ, Bertrand SIMON, and Frédéric SUTER. “An Exact Algorithm for the Linear Tape Scheduling Problem”. In: *The 32nd International Conference on Automated Planning and Scheduling (ICAPS)*. 2022.
- [C15] Alexander LINDERMAYR, Nicole MEGOW, and Bertrand SIMON. “Double Coverage with Machine-Learned Advice”. In: *13th Innovations in Theoretical Computer Science Conference (ITCS)*. 2022.
- [C16] Antonios ANTONIADIS, Joan BOYAR, Marek ELIÁŠ, Lene M. FAVRHOLDT, Ruben HOEKSMa, Kim S. LARSEN, Adam POLAK, and Bertrand SIMON. “Paging with Succinct Predictions”. In: *40th International Conference on Machine Learning (ICML)*. Accepted. 2023.
- [C17] Antonios ANTONIADIS, Christian COESTER, Marek ELIAS, Adam POLAK, and Bertrand SIMON. “Mixing Predictions for Online Metric Algorithms”. In: *40th International Conference on Machine Learning (ICML)*. Accepted. 2023.

International workshops

- [W1] Loris MARCHAL, Samuel MCCAULEY, Bertrand SIMON, and Frédéric VIVIEN. “Minimizing I/Os in Out-of-Core Task Tree Scheduling”. In: *19th Workshop on Advances in Parallel and Distributed Computational Models (APDCM)*. 2017.

- [W2] Bertrand SIMON, Joachim FALK, Nicole MEGOW, and Jürgen TEICH. “Energy Minimization in DAG Scheduling on MPSoCs at Run-Time: Theory and Practice”. In: *Workshop on Next Generation Real-Time Embedded Systems*. 2020.

Oral presentations

Conferences and workshops

- July 2014 “Scheduling Malleable Task Trees”. *9th Scheduling for Large Scale Systems Workshop*. ENS de Lyon (France).
- Mar. 2016 “Malleable task-graph scheduling with a practical speed-up model”. *New Challenges in Scheduling Theory Workshop*. Aussois (France).
- June 2016 “Ressource optimization for P.C. members: a subreview article”. *8th International Conf. on Fun with Algorithms*. La Maddalena (Italy).
- May 2017 “Minimizing I/Os in Out-of-Core Task Tree Scheduling”. *19th Workshop on Advances in Parallel and Distributed Computational Models*. Orlando (USA).
- Apr. 2018 “Online Scheduling of Sequential Task Graphs on Hybrid Platforms”. *New Challenges in Scheduling Theory Workshop*. Aussois (France).
- May 2018 “Parallel scheduling of DAGs under memory constraints”. *International Parallel and Distributed Processing Symposium*. Vancouver (Canada).
- June 2019 “Parallel scheduling of DAGs under memory constraints”. *MAPSP Conference*. Renesse (Netherlands).
- Jan. 2020 “Energy Minimization in DAG Scheduling on MPSoCs at Run-Time: Theory and Practice”. *NG-RES Workshop*. Bologna (Italy).
- Feb. 2020 “Online Metric Algorithms with Untrusted Predictions”. *Dagstuhl Scheduling Workshop*. Dagstuhl (Germany).
- Aug. 2020 “Computing a Minimum-Cost k-hop Steiner Tree in Tree-Like Metrics”. *MFCS Conference*. Online.
- Sept. 2020 “Online Metric Algorithms with Untrusted Predictions”. *Highlights of Algorithms (HALG) Conference*. Online.
- Jan. 2021 “Scheduling on Hybrid Platforms: Improved Approximability Window”. *LATIN Symposium*. Online.
- Feb. 2022 “Learning-Augmented Online Algorithms”. *Invited tutorial of the ROADEF annual congress*. Lyon (France).
- May 2022 “An Exact Algorithm for the Linear Tape Scheduling Problem”. *New Challenges in Scheduling Theory Workshop*. Aussois (France).
- June 2022 “An Exact Algorithm for the Linear Tape Scheduling Problem”. *ICAPS conference*. online.
- June 2022 “An Exact Algorithm for the Linear Tape Scheduling Problem”. *MAPSP Conference*. Oropa (Italy).
- June 2022 “Learning-Augmented Online Algorithms”. *15th Scheduling for Large Scale Systems Workshop*. Fréjus (France).
- Oct. 2023 “Learning-augmented Online Algorithms and Paging”. *3rd Workshop Complexity and Algorithms (CoA)*. Paris (France).
- Jan. 2024 “Learning-augmented Online Algorithms”. *Journées Combinatoires de Rhône-Alpes, d’Auvergne, des Littoraux Méditerranéen et Atlantique, etc.* Online.
- Mar. 2024 “Paging with Succinct Predictions”. *ROADEF*. Amiens (France).

Seminars and meetings

- Apr. 2014 “Scheduling Malleable Task Graphs With Memory Constraints”. *ANR SOLHAR - Focused meeting on the scheduling needs*. ENS de Lyon (France).
- Nov. 2014 “Scheduling Trees of Malleable Tasks for Sparse Linear Algebra”. *ANR SOLHAR - Plenary meeting*. LaBRI - Bordeaux (France).
- Nov. 2014 “Scheduling Trees of Malleable Tasks for Sparse Linear Algebra”. *Journée GOTHa commune avec le GdT Systèmes Distribués - Ordonnancement pour l'Informatique*. LIP6 - Paris (France).
- Dec. 2016 “Scheduling Series-Parallel Graphs of Malleable Tasks”. *ANR SOLHAR - Plenary meeting*. Toulouse (France).
- Jan. 2018 “Cache-efficient Skip Lists”. *Seminar for undergraduate students*. Le Pleynet (France).
- May 2018 “Task Graph Scheduling on Modern Computing Platforms”. *Invited seminar*. University of Bremen (Germany).
- Feb. 2019 “Parallel Scheduling of DAGs under Memory Constraints”. *Invited seminar*. LIRMM, Montpellier and LIG, Grenoble (France).
- Feb. 2019 “Minimizing I/Os in Out-of-Core Tree Scheduling”. *Invited seminar*. University of Bremen (Germany).
- Feb. 2019 “Scheduling Invasive Multicore Programs under Uncertainty”. *Semi-annual meeting of the TCRC 89 InvasIC project*. Irsee (Germany).
- Oct. 2019 “Scheduling Invasive Multicore Programs under Uncertainty”. *Annual meeting of the TCRC 89 InvasIC project*. Dinkelsbühl (Germany).
- Mar. 2020 “Scheduling Invasive Multicore Programs under Uncertainty”. *Semi-annual meeting of the TCRC 89 InvasIC project*. Online.
- Mar. 2020 “Ordonnancement de graphes de tâches sur plates-formes de calcul modernes”. *CC-IN2P3 seminar*. Villeurbanne (France).
- Mar. 2020 “Online Metric Algorithms with Untrusted Predictions”. *DataMove seminar*. LIG, Grenoble (France).
- Jan. 2021 “Online Metric Algorithms with Untrusted Predictions”. *Invited seminar*. University of Bremen, Online.
- Mar. 2022 “An Exact Algorithm for the Linear Tape Scheduling Problem”. *Datamove seminar (LIG)*. Grenoble (France).
- Mar. 2022 “Learning-Augmented Online Algorithms”. *ROMA seminar (LIP)*. Lyon (France).
- Apr. 2022 “Learning-Augmented Online Algorithms”. *Journée du groupe de travail SCALE*. Besançon (France).
- Apr. 2022 “Learning-Augmented Online Algorithms”. *GOAL seminar (LIRIS)*. Lyon (France).
- Oct. 2022 “An Exact Algorithm for the Linear Tape Scheduling Problem”. *Journées Calcul et Données*. Dijon (France).
- Nov. 2022 “An Exact Algorithm for the Linear Tape Scheduling Problem”. *14e Journées Informatiques IN2P3/IRFU*. Le Croisic (France).
- Dec. 2022 “Learning-Augmented Dynamic Power Management with Multiple States via New Ski Rental Bounds”. *Journée du groupe de travail SCALE*. Lyon (France).
- Dec. 2022 “Learning-Augmented Online Algorithms”. *IJCLab seminar*. Orsay (France).
- Feb. 2023 “An Exact Algorithm for the Linear Tape Scheduling Problem”. *FJPPL Workshop on computing technologies*. Lyon (France).
- July 2023 “Paging with Succinct Predictions”. *Journée du groupe de travail Gotha*. Grenoble (France).

Posters

- Jan. 2014 Bertrand SIMON, Brigitte JAUMARD, and Thai Hoa LE. “Deadlock Avoidance and Detection In Railway Simulation Systems”. *TRB Annual Meeting*. Presented by B. Jaumard. Washington, D.C. (USA).
- Apr. 2016 “Malleable task-graph scheduling with a practical speed-up model”. *SIAM Conference on Parallel Processing*. Paris (France).

Collective responsibilities

Refereeing

- | | | |
|------|---|--|
| 2023 | ICPP, Compas, ESA, STACS, IPCO, JPDC, ISAAC, LATIN | |
| 2022 | JEA, SEA, DCGE, JOTA, DO, TCS, ITCS | 2021 TPDS, SEA, Euro-Par, APPROX, TCS, STACS, CCGrid |
| 2020 | JOSH, JCSS, Euro-Par, Discrete Optimization, APPROX, Maths of OR, TCS | 2019 SPAA, Euro-Par, IPDPS, ISAAC, FOSSACS |
| 2018 | CCPE, Parallel Computing | 2017 ICPP, SUSCOM, IPDPS |
| 2016 | JPDC, ICPP, Parallel Computing | 2015 Parallel Computing |

Program Committee member

- 2023 International Conference on Parallel Processing, Compas (Conférence francophone d’informatique en Parallélisme, Architecture et Système)
- 2022 Symposium on Experimental Algorithms
- 2021 Symposium on Experimental Algorithms, Euro-Par (*Member of Track 03*)
- 2019 Euro-Par (*Co-chair of Topic 3: Scheduling and Load Balancing*)

Miscellaneous

- 2023 Examiner for the computer science written entrance exam of the *ENS*.
- 2022 Examiner for the computer science oral of the *ENS* entrance exam.

Scientific popularization

- 2015-2017 Co-supervision of middle school groups working on small research projects via the *Maths en Jeans* program.

Language skills

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|---------|--------------------|---------|------------------------|
| French | Native. | Spanish | Conversational. |
| English | Proficient. | German | Notions. |

Computer skills

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|------------------|--|-------------------|-------------------------|
| Scientific tools | C++, R, OCaml, Coq, Python, Maple, Java. | Office automation | LibreOffice, \LaTeX . |
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