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Bertrand SIMON

Education and positions

since 2025 **CNRS researcher (CRCN)**, *Laboratoire d'Informatique de Grenoble (LIG, France)*.

2020-2025 **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

2024 Justin Gunera (M2, 5 weeks)

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).

Support sessions, ENS de Lyon, L3 (6h).

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 HOEKSMA, 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 HOEKSMA, 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).

[J11] Alexander LINDERMAYR, Nicole MEGOW, and Bertrand SIMON. "Double Coverage with Machine-Learned Advice". In: *Algorithmica* (2025).

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)*. 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)*. 2023.

[C18] Spyros ANGELOPOULOS, Marcin BIENKOWSKI, Christoph DÜRR, and Bertrand SIMON. "Contract Scheduling with Distributional and Multiple Advice". In: *33rd International Joint Conference on Artificial Intelligence (IJCAI)*. 2024.

[C19] Christopher CHUNG, William JANNEN, Samuel MCCAULEY, and Bertrand SIMON. "Brief Announcement: Root-to-Leaf Scheduling in Write-Optimized Trees". In: *Proceedings of the 36th ACM Symposium on Parallelism in Algorithms and Architectures*. 2024.

[C20] Spyros ANGELOPOULOS, Loris MARCHAL, Adrien OBRECHT, and Bertrand SIMON. "A new paging problem for Mixture-of-Experts LLMs". In: *European Conference on Parallel Processing (Euro-Par)*. 2025.

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 on 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).

May 2024 “Contract Scheduling with Distributional and Multiple Advice”. *New Challenges in Scheduling Theory Workshop*. Aussois (France).

June 2024 “Contract Scheduling with Distributional and Multiple Advice”. *MAPSP Conference*. Kolding (Denmark).

Nov. 2024 “Contract Scheduling with Distributional and Multiple Advice”. *4th Workshop on Complexity and Algorithms (CoA)*. Paris (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).

May 2024 "Contract Scheduling with Distributional and Multiple Advice". *GROG team seminar*. 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

2025 JPDC, ICALP, ICPP, ESA, TPDS

2024 MAPSP, Compas, ICPP, WAOA, OR Letters, STACS

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

2025 International Conference on Parallel Processing

2024 International Conference on Parallel Processing, Compas (Conférence francophone d'informatique en Parallélisme, Architecture et Système), Workshop on Models and Algorithms for Planning and Scheduling Problems

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

French **Native.**
English **Proficient.**
Spanish **Conversational.**
German **Notions.**

Computer skills

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

Update: 09 / 2025