

Arthur Bit-Monnot

Associate Professor
INSA / LAAS-CNRS

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29 years old



Academic Experience

- Since September 2019 **Associate professor, INSA – LAAS-CNRS, Toulouse.**
I am an associate professor (Maître de Conférences) in the the department of electronics and informatics of INSA Toulouse where I mostly teach programming (functional and object oriented) and combinatorial optimization.
My research is carried out in the RIS team at LAAS-CNRS and target the integration of AI methods (and task planning in particular) into the decisional architectures of autonomous robots.
- Since September 2017 **Post-Doctoral Researcher, University of Sassari & University of Genoa, Italy.**
Work on controller synthesis for Cyber-Physical Systems (CPS), using SMT and optimization methods to provide decisions that account for the low-level parameters of controllers in CPS. [1,2,4,11]
- January – June 2017 **Post-Doctoral Researcher, LAAS-CNRS, Toulouse, France.**
Work on trajectory planning for fixed wing UAVs in the context of forest fire monitoring. Development focused on the use of local-search optimization techniques from Operations Research to produce high-quality trajectories in the presence of large spaces, dynamic phenomenons and non-linear objective functions. [3,5]
- October 2013 – December 2016 **PhD in Artificial Intelligence and Robotics, LAAS-CNRS, Toulouse.**
Work on task planning and autonomous deliberation in robotic systems. I developed FAPE, a task planner that exploits techniques of constraint programming and heuristic search to deal with complex temporal and hierarchical domains. FAPE is extended to account for temporal uncertainty and online execution on robotic platforms. [6,7,8,12,13]
Advisers: Malik Ghallab, Félix Ingrand
- October 2015 – January 2016 **Visiting Researcher, NASA Ames Research Center, California, USA.**
Work on automated analysis techniques for task planning problems involving temporal and hierarchical components. [7,12]
- 2013 – 2015 **Teaching Assistant, INSA, Toulouse.**
128 hours of lectures and practical tutorials in Computer Science (programming, networking, graph algorithms) at the undergraduate level of an engineering school (INSA Toulouse).
- 2013
6 months **Master Thesis in Operations Research, LAAS-CNRS, Toulouse.**
Work in Operations Research on optimal methods for computing carpooling routes in multi-modal transportation networks. [9]
- 2012
3 months **Research Internship in Semantic Web and Information Retrieval, Federal University of Rio de Janeiro, Brazil.**
Analysis and adpatation of Information Retrieval techniques to take advantage of the structure of RDF data. [10]
- 2011
6 months **Research Internship in Networking, NICTA, Sydney, Australia.**
Adaptation of the BitTorrent protocol to support sequential downloads for streaming purposes.

Education

- December 2016 **PhD in Artificial Intelligence and Robotics**, *INP*, Toulouse.
Keywords: Task Planning, Constraint Programming, Robotics.
- June 2013 **Master degree in Artificial Intelligence**, *Univ. Paul Sabatier*, Toulouse.
Specialization on Planning, Machine Learning and decision under uncertainty. Ranking: 2/14.
- June 2013 **Engineering Degree**, *INSA*, Toulouse.
Engineering degree with specialization in Computer Science and Combinatorial Optimization

Organization and Supervision Activities

- Reviewer Program Committee member of IJCAI 2018–2019, AAI 2019, ICAPS 2017–2019 and Plan-
Rob 2018–2019.
Occasional Reviewer for Artificial Intelligence (2018), JAIR (2018), AAI (2015), ICAPS
(2015/2016), CP (2018), Computational Intelligence (2017).
- Supervision In 2015, I supervised Martin Lagleize for his Master thesis on the evaluation of constraint-
based task planners.
Since 2017, I am participating in the supervision of Rafael Bailon-Ruiz for his PhD on the
Fire-RS project on which I a was post-doctoral researcher.

Awards

- PhD Thesis In 2016, I was awarded the Leopold Escande award that rewards the best PhD dissertations
defended at INP Toulouse.
- Master Thesis In 2013, I was awarded the AIIT price that rewards the most innovative master thesis at
INSA Toulouse.

Scholarships

- Mobility Scholarship Obtained on July 2015 from University of Toulouse for funding a 4 months research exchange
at NASA Ames Research Center
- PhD Scholarship Obtained on July 2013 from *Ecole des Docteurs* of Toulouse, for funding my 3 years PhD
program.

Skills

- Computer Science ■■■■■ Automated Planning & Scheduling, Temporal Constraint Networks
■■■■■ Heuristic Search, Constraint Programming, Optimization, Hybrid Systems, SMT
■■■□□ Mathematical Modelling, Robotics (ROS, Motion Planning, Sensing)

Languages ■■■■■ English, French
■■■□□ Italian, Portuguese (Brazil)

Publications

International Conferences

- [1] Cyber-Physical Planning: Deliberation for Hybrid Systems with a Continuous Numeric State, 2019
A. Bit-Monnot, L. Pulina, A. Tacchella
To appear in: *International Conference on Automated Planning and Scheduling (ICAPS)*
- [2] SMT-based Planning for Robots in Smart Factories, 2019
A. Bit-Monnot, F. Leofante, L. Pulina, A. Tacchella
To appear in: *International Conference on Industrial, Engineering & Other Applications of Applied Intelligent Systems (IEA/AIE)*
- [3] Planning to Monitor Wildfires with a Fleet of UAVs, 2018
R. Bailon-Ruiz, **A. Bit-Monnot** & S. Lacroix
In *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*
- [4] A Constraint-based Model for Domain-Independent Temporal Planning, 2018
A. Bit-Monnot
In *International Conference on Principles and Practice of Constraint Programming (CP)*
- [5] A Local Search Approach to Observation Planning with Multiple UAVs, 2018
A. Bit-Monnot, R. Bailon-Ruiz & S. Lacroix
In *International Conference on Automated Planning and Scheduling (ICAPS)*
- [6] Which Contingent Events to Observe for the Dynamic Controllability of a Plan, 2016
A. Bit-Monnot, M. Ghallab & F. Ingrand
In *International Joint Conference on Artificial Intelligence (IJCAI)*
- [7] Delete-free Reachability Analysis for Temporal and Hierarchical Planning, 2016
A. Bit-Monnot, D. E. Smith, & M. Do.
In *European Conference on Artificial Intelligence (ECAI)*
- [8] Planning and Acting with Temporal and Hierarchical Decomposition Models, 2014
F. Dvořák, R. Barták, **A. Bit-Monnot**, M. Ghallab & F. Ingrand
In *International Conference on Tools for Artificial Intelligence (ICTAI)*
- [9] Carpooling: the 2 synchronization points shortest paths problem, 2013
A. Bit-Monnot, C. Artigues, MJ. Huguet, MO. Killijian
In *Algorithmic Approaches for Transportation Modelling, Optimization, and Systems (ATMOS)*
- [10] Casablanca: Towards a Dataset-Independent Tool for Semantic Web Annotation, 2013
A. Bit-Monnot, A. Vivacqua, J. Da Silva
In *International Conference on Semantic Computing (ICSC)*

International Workshops

- [11] Goal-based Deliberation for Cyber-Physical Systems, 2018
Arthur Bit-Monnot
In *Cyber-Physical Systems Workshop*

- [12] Delete-free Reachability Analysis for Temporal and Hierarchical Planning, 2016
A. Bit-Monnot, D. E. Smith, & M. Do.
In *ICAPS Workshop on Heuristic and Search for Domain-Independent Planning (HSDIP)*
- [13] A Flexible ANML Actor and Planner in Robotics, 2014
F. Dvořák, R. Barták, **A. Bit-Monnot**, M. Ghallab & F. Ingrand
In *ICAPS Workshop on Planning in Robotics (PlanRob)*