ACP / ANITI / GDR IA / GDR RO Autumn School

Constraint Programming - Combinatorial Optimization - Machine Learning

LAAS-CNRS - November 23–27 2020

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Program at a glance

	Mon. 23	Tue. 24	Wed. 25	Thu. 26	Fri. 27
10:00					
	Introduction to the CP tutorial & hackaton day (fully online)	Welcome session			
11:00	Constraint Programming Solver Technology - Mini CP Tutorial (fully online) 	Integrating Machine Learning into state of the art Vehicle Routing Heuristics 	1st session: Principles of data science + practical: deep learning for digit recognition 	Structured learning as a tool for Operations Research 	Experimental evaluation: Some good practices and pitfalls to avoid 
12:00					
13:00	Break	Lunch break	Lunch break	Lunch break	Lunch break
14:00	Constraint Programming Hackaton		2nd Session: Learning from user and environment in combinatorial optimisation + practical: visual sudoku solving		
15:00		Learning and solving Cost Function Networks : Algorithms in Theory and Practice - Part I 	CP Hackaton 2020 Prize Awarding	Constraint acquisition and declarative data mining - Part I 	Some experiences of using Machine Learning for scheduling jobs in distributed systems 
16:00			Break		Fa on
17:00		Learning and solving Cost Function Networks : Algorithms in Theory and Practice - Part II 	Machine Learning Meets Automated Reasoning: Explainability, Fairness, Robustness and Model Learning 	Constraint acquisition and declarative data mining - Part II 	
18:00					

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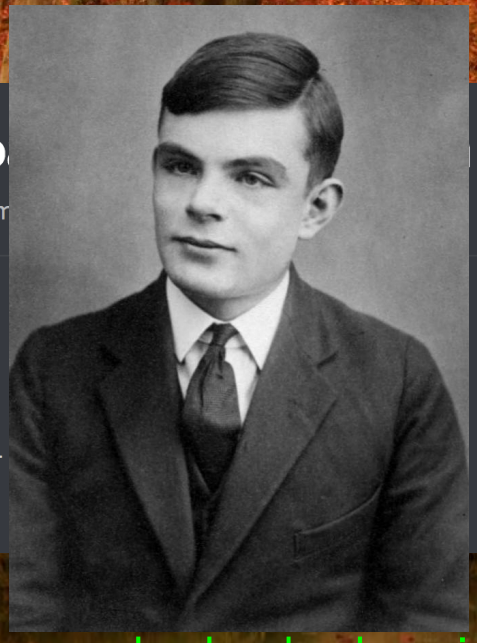
Constraint Programming Hackathon on the Enigma Machine



Big success - Big challenge - the hackathon is going on till Wednesday 25th 12PM GMT+1 – Prize awarding Wednesday 25th 15h30 GMT+1

Valentin Antuori (LAAS-CNRS, Renault), Julien Ferry (LAAS-CNRS), Emmanuel Hébrard (LAAS-CNRS), Carla Juvin (LAAS-CNRS), Tom Portoleau (LAAS-CNRS, IRIT), Louis Rivière (LAAS-CNRS, IRIT, ANITI), Pierre Schaus (UC Louvain)

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520 registered participants (**320** PhD/MSc Students)

Country	# participants	# students	Country	# participants	# students
France	328	190	China	3	3
Italie	28	22	Switzerland	3	2
Portugal	15	14	Denmark	2	1
Belgium	14	12	Nigeria	2	1
Ireland	14	8	Singapore	2	1
Canada	13	9	Cameroon	2	2
Morocco	10	7	India	2	1
Brazil	9	6	Austria	1	1
Algeria	9	5	Sweden	1	1
UK	8	6	Australia	1	1
Chile	7	3	Ghana	1	1
USA	6	3	Ukraine	1	1
Germany	6	3	Senegal	1	1
Spain	5	3	Greece	1	1
Hong Kong	4	3	Netherlands	1	1
Turkey	4	3	Iran	1	0
Norway	4	2	Myanmar	1	0
Colombia	4	1	Qatar	1	0
Tunisia	4	0	Indonesia	1	0

Get together in chatrooms during the breaks on discord !

`https://discord.gg/mwdthvRuaN`

ACP: Association for Constraint Programming

http://a4cp.org

The Association for Constraint Programming aims at promoting constraint programming in every aspect of the scientific world, by encouraging its theoretical and practical developments, its teachning in the academic institutions, its adoption in the industrial world, and its use in the the application fields. ACP supports the **CP** conference series and the **Constraints** journal.

Apply to the doctoral program: possibility to have free registration and accomodation to the next CP conferences

Emmanuel Hébrard, member of the executive committee.

LAAS: Laboratory for Analysis and Architecture of Systems

Toulouse, France

This is where the school should have been hosted [...] We hope to welcome you for future research collaborations.

https://www.laas.fr/

CP Has Landed on the Comet

On June 13th 2015, the robot-lab Philae woke up on the comet 67P/Churyumov-Gera
experiments interrupted seven months ago. These experiments were scheduled usin
researchers of the team ROC developed propagation algorithms to help the *Scientifi*
Centre (SONC) to efficiently achieve this task.

The Rosetta/Philae mission was launched in 2004 and it took more than ten years fo
its destination after a 6 billion kilometres long trip. On November 12th 2014, the lar
and landed on the ground of the comet. Philae is fitted with ten instruments (see Fi
elaborated by as many research teams across Europe. These experiments, should th
sampling (SD2, COSAC, PTOLEMY) or other types of signal analysis, correspond to sec
two extremely scarce resources:

- First, instruments were supplied in energy by the main battery alone, which b
  low-energy light-bulb lit up during the three days of this first sequence.
- Second, all the data collected by the instruments were stored on a central ma
  that is, about as much as 4 floppy disks.

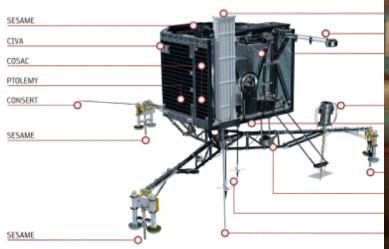

Figure 1. Philae's instruments (© ESA/AOES Medialab)

Marie-José Huguet, head Combinatorial Optimization, Operations Research and Constraints team

CNRS : French National Centre for Scientific Research

http://www.cnrs.fr/

GDR: Groupements de recherche (Research networks):

GDR IA
(Artificial Intelligence)

https://www.gdria.fr
Sébastien Konieczny, Director.

GDR RO
(Operations Research)

http://gdrro.lip6.fr
Christian Artigues, Director.

GDR RO: French Research Network on Operations Research

http://gdrro.lip6.fr

Find your community across the working groups of 7 thematic axis

- Mathematical optimization
- Decision: Modeling, Evaluation and Uncertainty
- **Hybrid Methods**, Metaheuristics and **Constraint Programming** ROCT
- Complexity, Approximation and Graphs
- Networks, Energy, Services and **Logistics and Transportation** GT2L
- Planning, **Scheduling** and Applications
- Transversal axis: **Data-driven optimization and machine learning**, Robust decision and Optimisation, Sustainable OR

Apply to the Doctoral Mobility grants (French Univ.)