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# State of CP Teaching - An Overview

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University College Cork, Cork, Ireland



SFI RESEARCH CENTRE FOR DATA ANALYTICS

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# Overview

- Provide an overview of "State of CP Teaching"
- Results of short survey
- Overview of on-line courses
- Other resources
- Books
- How visible is CP to the wide world?

# Table of Contents

Survey Results

General Resource Pages

Summer Schools

Books

What does the world know about Constraint Programming?

# Results of Survey

- Google forms survey announced on August 10th
- Survey still open at <https://forms.gle/v54HUsbSXcyHmfME9>
- Emails sent to some members of community
- So far, 45 participants from 18 countries
- Focus on CP courses, perhaps widen scope
- Several participants run multiple courses

# Aims of Survey

- Find out where CP is taught
- Find out how CP is taught
- Who is the audience?
- Identify main topics being taught
- See which tools are used by courses
- Teaching material/curriculum collection

### Constraint Programming Education Survey

Hello! We kindly ask for 5 minutes of your time for the following survey on CP courses. This information will be used for discussion at the WTCP 2023 workshop in Toronto, as well as for general understanding on educational practices within the CP community.

Email \*

Valid email address

This form is collecting email addresses. [Change settings](#)

Does your institution offer a CP course? \*

Yes

No

If no, what are the barriers or reasons?

Long-answer text

If you answered yes to the first question, who is the audience?

Undergraduates

Graduate Students

Both

Other...

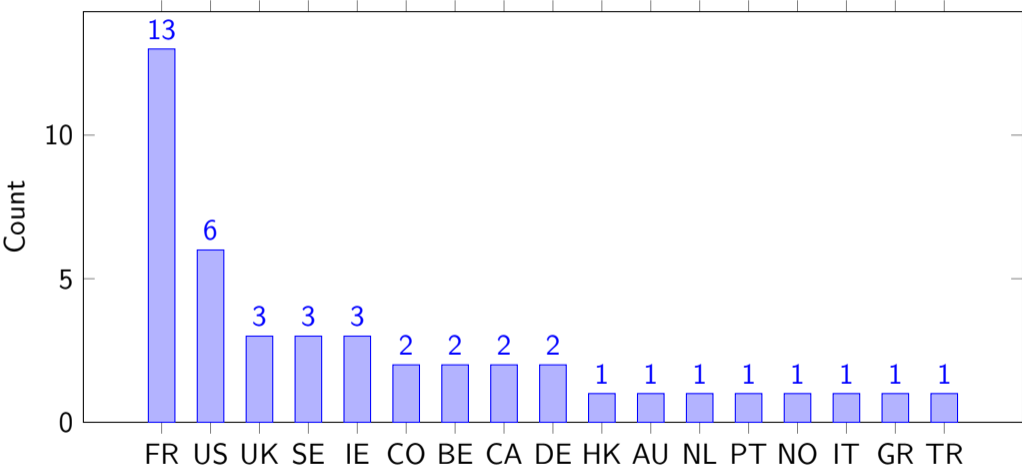
How long has the course been taught?

Soon to start

Within the last year

Within the last 3 years

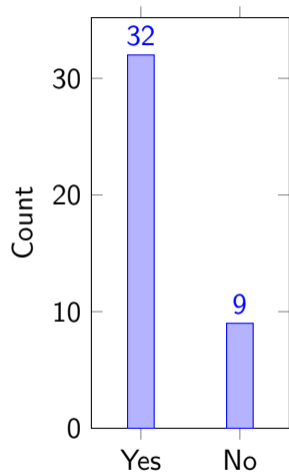
# Participants by Country (Total = 45)



# Institutions Covered

- France
  - CRIL Lens
  - Montpellier
  - Grenoble
  - Sophia Antipolis
  - Nice
  - Ecole Polytechnique
  - IMT Nantes
  - IMT Brest
  - INRAE
  - UPHF Valenciennes
  - Gosling
  - IRISA, Rennes
  - INRIA
- Canada
  - Laval
  - Poly Montreal
- USA
  - UT Dallas
  - Brown
  - CMU
  - UConn
  - City University New York
  - Georgia Tech
- UK
  - Edinburgh
  - York
  - St Andrews
- Sweden
  - Lund Univ
  - RISE
  - Uppsala
- Belgium
  - Louvain
  - KU Leuven
- Germany
  - Fraunhofer
  - TU Cottbus
- Ireland
  - MTU
  - UCC
  - CRT-AI
- Others
  - UDG Girona, Spain
  - CUHK, China
  - Monash, Australia
  - Delft, NL
  - Lisbon, Portugal
  - Bologna, Italy
  - Simula, Norway
  - Western Macedonia, Greece
  - Universidad del Valle, Colombia
  - Izmir, Turkey

## Does your institution offer a CP course?



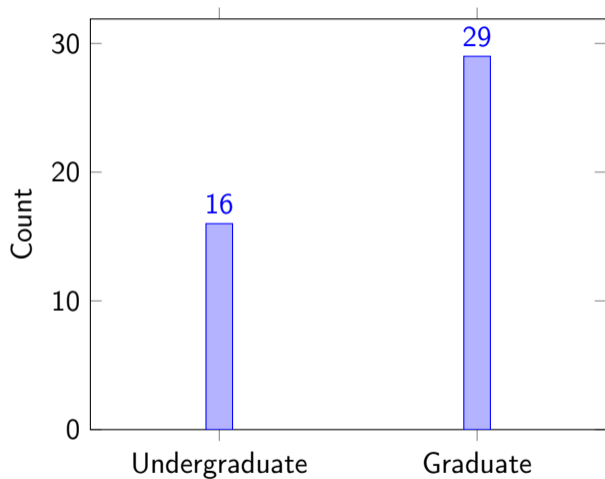


## If not, why not (Total 9)?

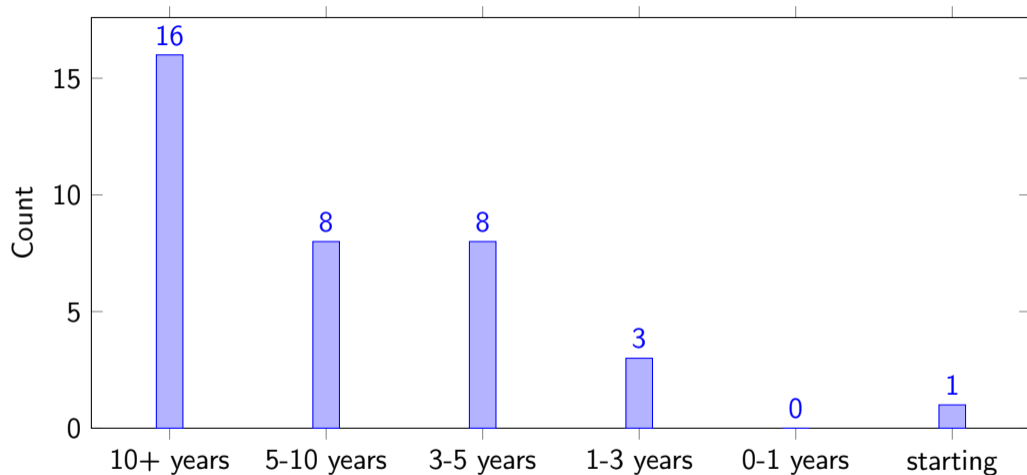
- (4) No students (industry, research centre)
- (2) Time/Workload
- (1) No interest by students
- (1) Not allowed by institution
- (1) CP is not a recommended course in the ACM Curricula Recommendations.

We did not receive any answer from industry running CP training.

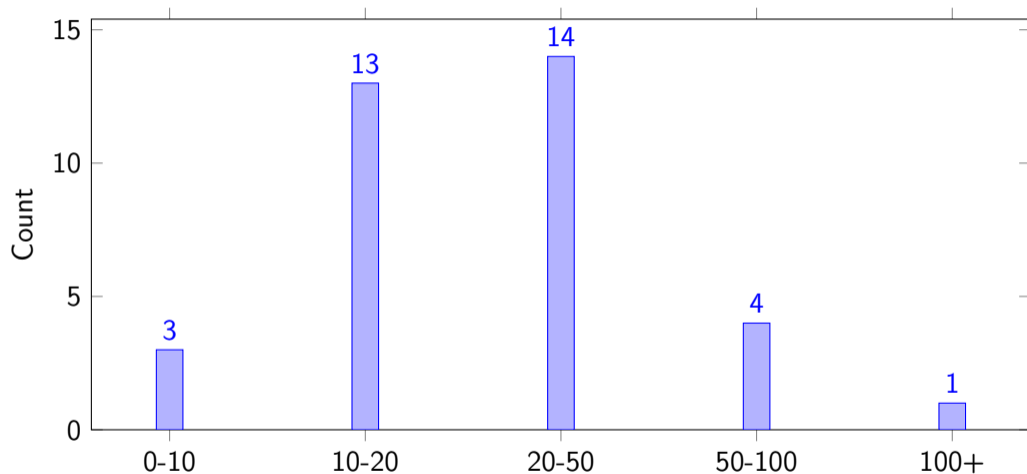
## Audience (Multiple Allowed)



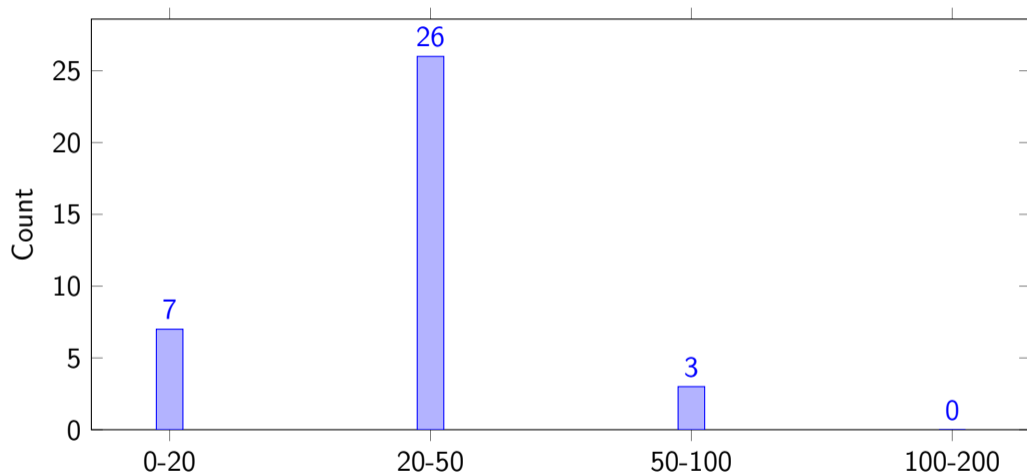
## How long has the course been offered?



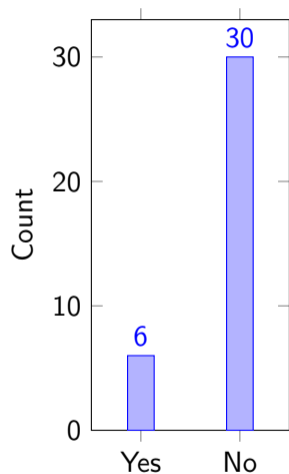
## How many students does each offering of the course have?



## How many hours of instruction does the course have?



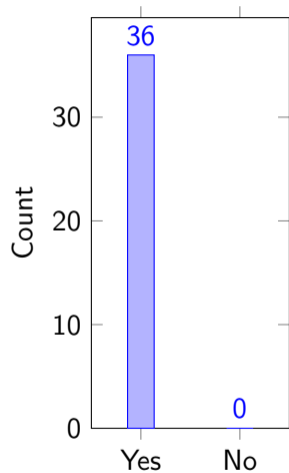
## Does the class use a textbook or similar resource?



## If yes, which resource is used? (Multiples Allowed)

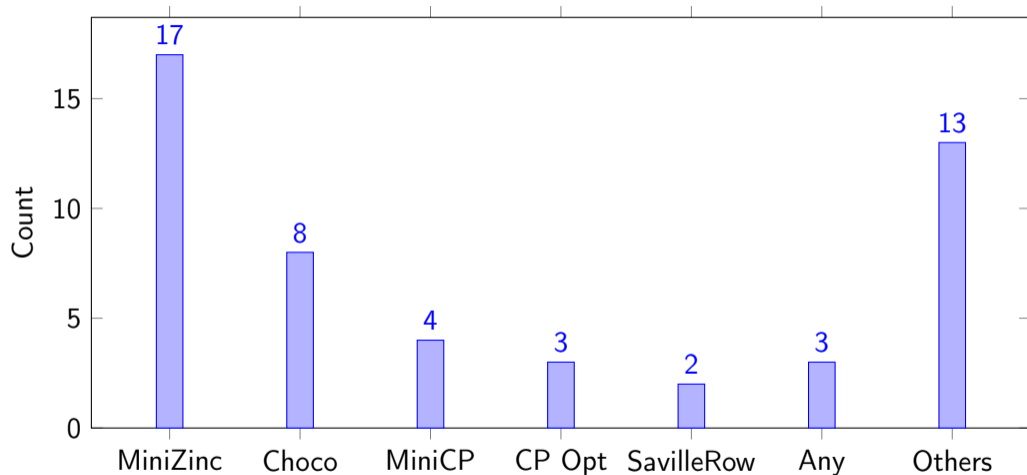
- (2) Krzysztof Apt "Principles of Constraint Programming"
- Jupyter notebooks
- MiniZinc Handbook
- EdX MOOC
- MiniCP material
- Krzysztof Kuchcinski, "Modeling and Optimization of Embedded System with Constraint Programming: Principles and Practice"
- Global Constraint Catalog
- Choco manual
- Research papers

## Does the class involve coding?





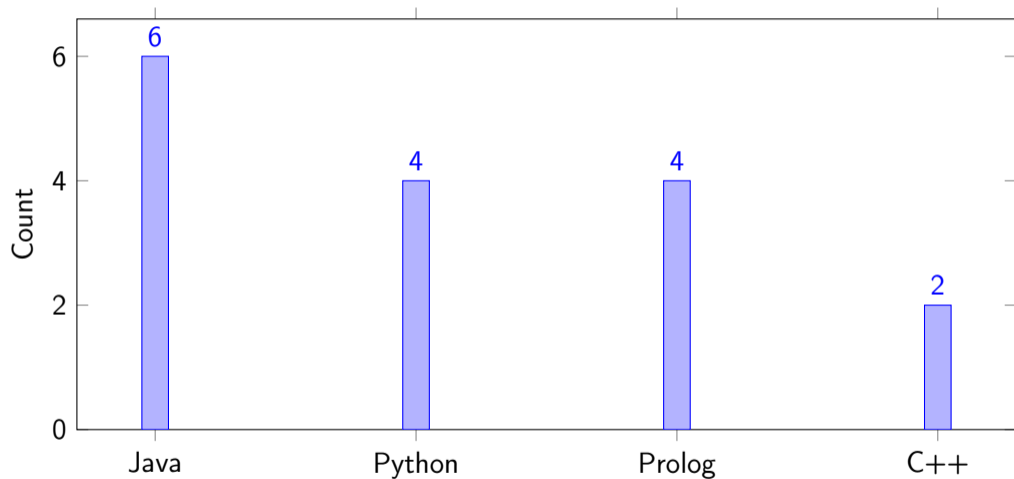
## Solver/System Used? (Multiple Allowed)



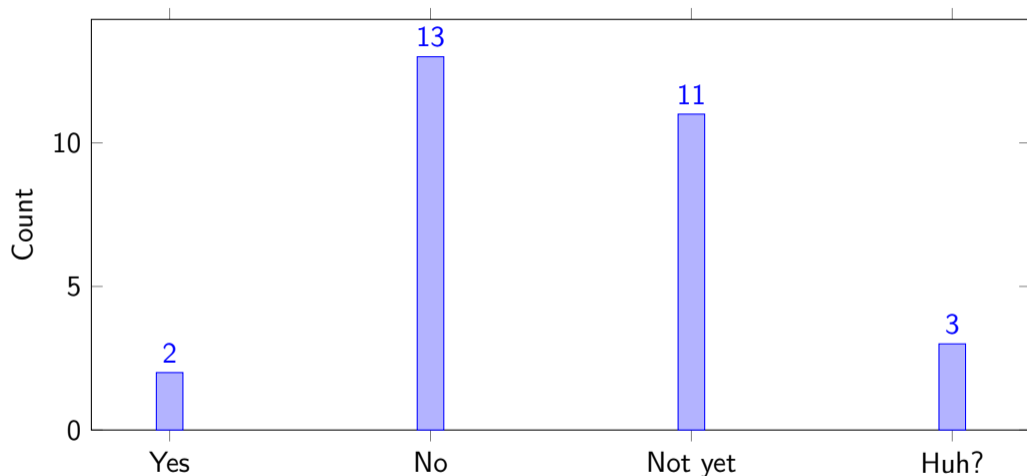
## Other Solvers/Systems Named

- SICStus Prolog
- SAT
- Conjure
- PyCSP3
- pysat
- Z3
- Clingo
- OPL
- Cplex
- Hava
- Z3
- Jacop
- SWI Prolog
- Essence'
- pytoolbar
- ECLiPSe

## Programming Language Used? (Multiple Allowed)



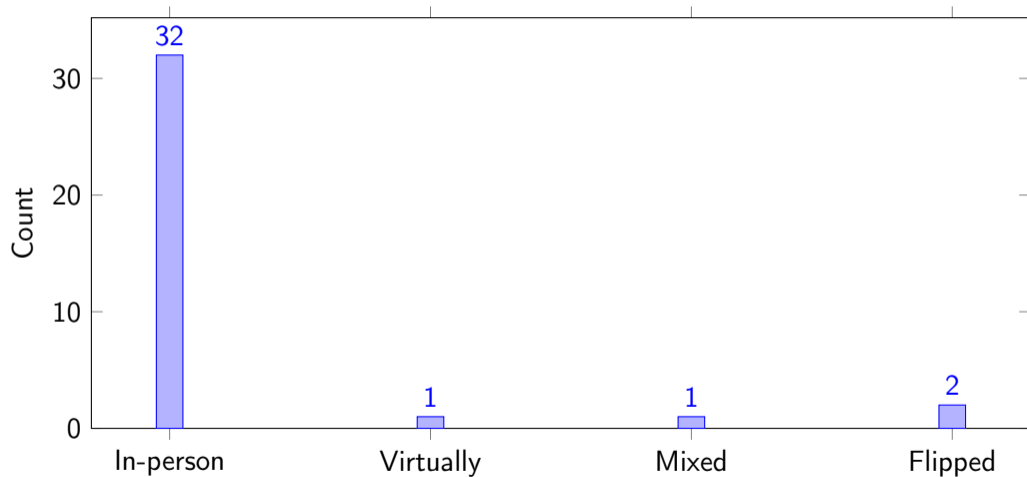
## Have you seen any impact of Large Language Models (LLM)?



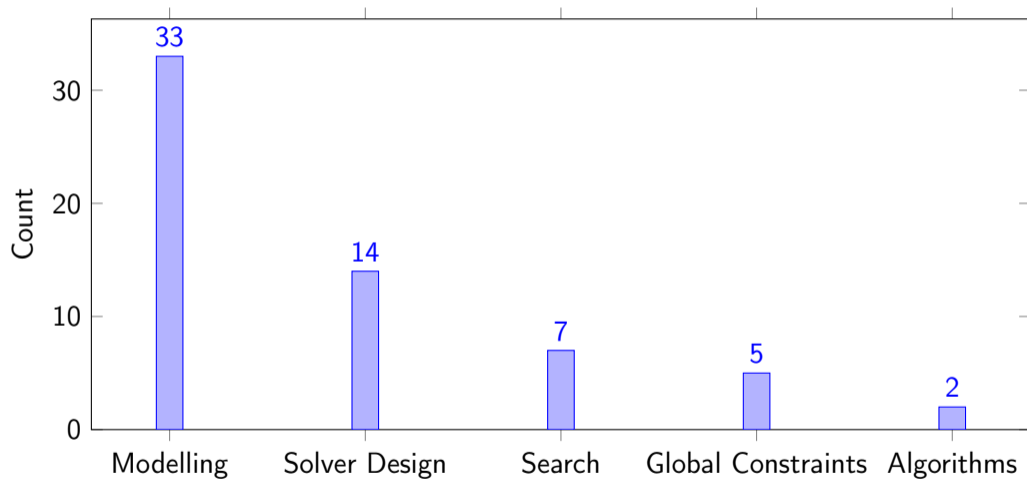
## Positive Remarks about LLM

- I have added material on how LLMs can be leveraged to build more interesting applications using CLP/LP.
- Yes, some student asked Chat-GPT to find a bug in her MiniZinc program. It found the bug.

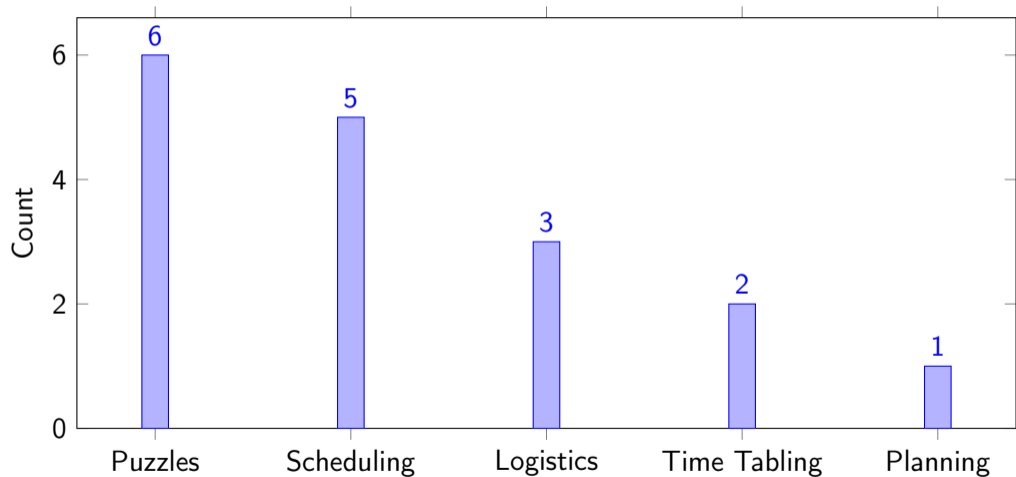
## Is the instruction primarily delivered through in-person interaction or through videos/MOOC?



## What sort of exercises do the students solve (Free Form, Areas)?



## What sort of exercises do the students solve (Free Form, Problem Types)?





## Comments (Selection)

- The course is pretty challenging for students without a lot of computational thinking, and since it doesn't have many direct prerequisites there are always a number of weak students who struggle a lot. Partly because we have a generation of weak students who complete assignments by a combination of LLM and reddit and trial and error!
- This is a timely workshop because the ACP EC is currently discussing the dissemination of CP through turnkey teaching modules that can be incorporated into university courses and through turnkey tutorials that can be proposed in related conferences.
- Prolog with appropriate constraint solving and constraint-based modeling libraries should be the right language to teach CP

# Survey Summary

- Snapshot of current situation
- Notable systems missing (CP-SAT)
- How many courses are we missing?
- How do people learn CP outside the academic environment?
- Do *you* teach a CP course and are not on the list? Please fill in survey at <https://forms.gle/v54HUsbSXcyHmfME9>
- Do you know about courses in other places? Talk to us!

# Table of Contents

Survey Results

**General Resource Pages**

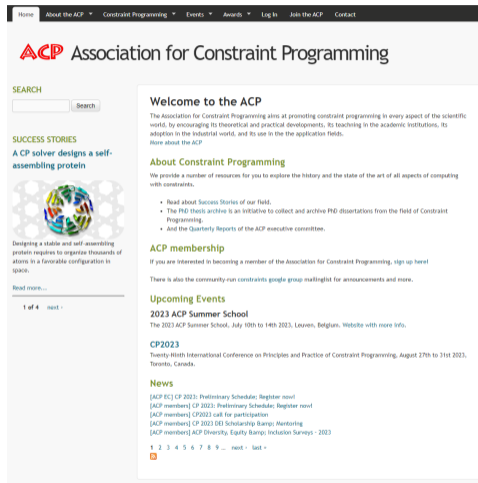
Summer Schools

Books

What does the world know about Constraint Programming?

# Association for Constraint Programming (ACP)

- Main site of organization
- Formal description of rules and structure
- <https://www.a4cp.org/>



The screenshot shows the homepage of the Association for Constraint Programming (ACP). At the top, there is a navigation menu with links for Home, About the ACP, Constraint Programming, Events, Awards, Log In, Join the ACP, and Contact. The main header features the ACP logo and the text "Association for Constraint Programming". Below the header is a search bar with a "Search" button. The page is divided into several sections: "SUCCESS STORIES" with a sub-heading "A CP solver designs a self-assembling protein" and a corresponding image of a protein structure; "About Constraint Programming" with a brief description and a list of resources; "ACP membership" with information on how to join; "Upcoming Events" listing the 2023 ACP Summer School and CP2023; and "News" with several recent articles. The page also includes a pagination indicator at the bottom of the success stories section showing "1 of 4" and "next".

# CP Resources Curated by E. Freuder

- Collection of many items related to CP
- Implemented using pearltrees
- <https://www.pearltrees.com/constraints/resources/id39817957>

The screenshot shows a Pearltrees resource collection titled "Resources" for the topic "Constraints". The page header includes navigation icons and statistics: "Constraints", "February 5, 2023", "300 items", "4.7k views", and "comment". A descriptive paragraph states: "This is a collection of resources related to constraints: constraint programming, constraint-based reasoning, constraint satisfaction and optimization. It is a work in progress, which will probably always be 'in progress'. If you have suggestions for additions or changes, you can contact the curator. Read more".

The resources are organized into a grid of 25 categories, each with a representative image and a count of items:

- Curator: 1 item
- Learn: 908 items (Image: "WHAT DO YOU WANT TO LEARN?")
- Demos: 1 item (Image: "DEMONSTRATE")
- Puzzles & Games: 1 item (Image: colorful puzzle pieces)
- Association for Constraint Programming: 1 item (Image: ACP logo)
- Online Discussion Groups: 1 item (Image: people in a meeting)
- Research Groups: 22 items (Image: group of people)
- Conferences and Workshops: 110 items (Image: conference attendees)
- Solvers, Languages, Libraries: 546 items (Image: server racks)
- Connections to Other Fields: 1 item (Image: white spheres)
- Applications: 109 items (Image: yellow excavator)
- Companies: 14 items (Image: modern building)
- Journals: 1 item (Image: bookshelves)
- Books: 243 items (Image: stack of books)
- Theses: 35 items (Image: bookshelves)
- Papers: 1 item (Image: stack of papers)
- Surveys, Overviews, Blog/aggregates: 33 items (Image: computer monitor)
- Problems and Competitions: 1 item (Image: cartoon character with "Problem" sign)
- Tools: 1 item (Image: various tools)
- Videos: 34 items (Image: camera equipment)
- Photos: 1 item (Image: landscape photo)
- Media: 1 item (Image: "GOOD NEWS!" sign)
- Songs: 1 item (Image: musical staff)
- History: 1 item (Image: historical building)
- Potpourri: 1 item (Image: red flowers)


# On-line Courses

## Courses


← ↑ +) + 👤 🔗 🎯

🌐 Constraints 📅 January 19, 2023 🗄️ 5 items 👁️ 365 views 💬 comment


Pierre Schaus, Laurent Michel, Pascal Van Hentenryck




Pascal Van Hentenryck



Jimmy Ho Man Lee  
Peter Stuckey



Helmut Simonis



Online Learning Resources for Reasoning With Constraints chapter of Artificial...

From the Online Learning Resources page (<http://artint.info/2e/onlin e.html>) at the website for ...

Link <https://www.pearltrees.com/constraints/courses/id39842792>

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Survey Results

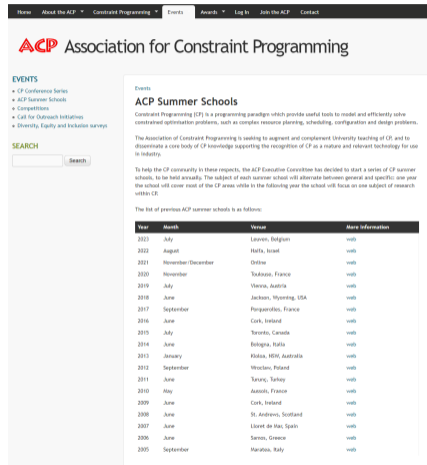
General Resource Pages

Summer Schools

Books

What does the world know about Constraint Programming?

- Running yearly since 2005
- Typical one week course
- Research oriented
- For PhD students in the field
- <https://www.a4cp.org/events/summer-schools>



The screenshot shows the website for the Association for Constraint Programming (ACP). The navigation bar includes links for Home, About the ACP, Constraint Programming, Events, Awards, Log In, Join the ACP, and Contact. The main header features the ACP logo and the text "Association for Constraint Programming".

**EVENTS**

- CP Conference Series
- ACP Summer Schools
- Competitions
- Call for Outreach Initiatives
- Diversity, Equity and Inclusion surveys

**SEARCH**

**Events**

### ACP Summer Schools

Constraint Programming (CP) is a programming paradigm which provides useful tools to model and efficiently solve constrained optimization problems, such as complex resource planning, scheduling, configuration and design problems.

The Association of Constraint Programming is seeking to augment and complement University teaching of CP, and to disseminate a core body of CP knowledge supporting the recognition of CP as a mature and relevant technology for use in industry.

To help the CP community in these respects, the ACP Executive Committee has decided to start a series of CP summer schools, to be held annually. The subject of each summer school will alternate between general and specific: one year the school will cover most of the CP areas while in the following year the school will focus on one subject of research within CP.

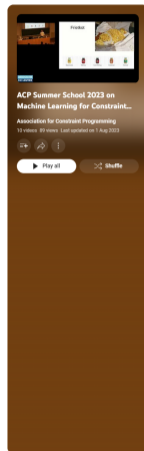
The list of previous ACP summer schools is as follows:

Year	Month	Venue	More information
2023	July	Leuven, Belgium	<a href="#">web</a>
2022	August	Haifa, Israel	<a href="#">web</a>
2021	November/December	Odisee	<a href="#">web</a>
2020	November	Toulon, France	<a href="#">web</a>
2019	July	Vienna, Austria	<a href="#">web</a>
2018	June	Jackson, Wyoming, USA	<a href="#">web</a>
2017	September	Pangarolles, France	<a href="#">web</a>
2016	June	Cork, Ireland	<a href="#">web</a>
2015	July	Toronto, Canada	<a href="#">web</a>
2014	June	Bologna, Italy	<a href="#">web</a>
2013	January	Kilda, NSW, Australia	<a href="#">web</a>
2012	September	Wroclaw, Poland	<a href="#">web</a>
2011	June	Tsukuba, Tokyo	<a href="#">web</a>
2010	May	Auxois, France	<a href="#">web</a>
2009	June	Cork, Ireland	<a href="#">web</a>
2008	June	St. Andrews, Scotland	<a href="#">web</a>
2007	June	Lloret de Mar, Spain	<a href="#">web</a>
2006	June	Samos, Greece	<a href="#">web</a>
2005	September	Maribou, Italy	<a href="#">web</a>



# Summer School 2023 in Leuven/Belgium

- In July 2023
- Focus on ML and CP combination
- Lectures recorded, available on youtube
- <https://www.youtube.com/playlist?list=PLcByDT7vRTYJ2s6DL-3bzjGwtQif33y3>



- 1 ACP Summer School 2023: 'Intro to Constraint Programming' by Tias Guns  
Association for Constraint Programming - 78 views - 3 weeks ago  
1:17:24
- 2 ACP Summer School 2023: 'Introduction to Machine Learning' by Hendrik Blockeel  
Association for Constraint Programming - 46 views - 3 weeks ago  
1:19:55
- 3 ACP Summer School 2023: 'End-to-end Constrained Optimization Learning' by Ferdinando Fioretto  
Association for Constraint Programming - 22 views - 3 weeks ago  
1:27:25
- 4 ACP Summer School 2023: 'Getting the Best out of your Constraint Solver' by Lars Kotthoff  
Association for Constraint Programming - 52 views - 3 weeks ago  
1:23:17
- 5 ACP Summer School 2023: 'Predict-then-optimize' by Elias Khalil  
Association for Constraint Programming - 40 views - 3 weeks ago  
1:26:54
- 6 ACP Summer School 2023: 'Deep Learning & Combinatorial Optimization' by Wouter Kool  
Association for Constraint Programming - 45 views - 3 weeks ago  
1:22:25
- 7 ACP Summer School 2023: 'Rambling Away from Decision-Focused Learning' by Michele Lombardi  
Association for Constraint Programming - 23 views - 3 weeks ago  
1:39:29
- 8 ACP Summer School 2023: 'Learning a Value-Selection Heuristic' by Quentin Cappart  
Association for Constraint Programming - 15 views - 3 weeks ago  
1:16:45
- 9 ACP Summer School 2023: 'Deep RL in Solving Industrial Optimization Problem' by Yingqian Zhang  
Association for Constraint Programming - 57 views - 3 weeks ago  
1:28:15
- 10 ACP Summer School 2023: 'Constraint Acquisition' by Dimos Tsouros  
Association for Constraint Programming - 45 views - 3 weeks ago  
1:29:43

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Survey Results

General Resource Pages

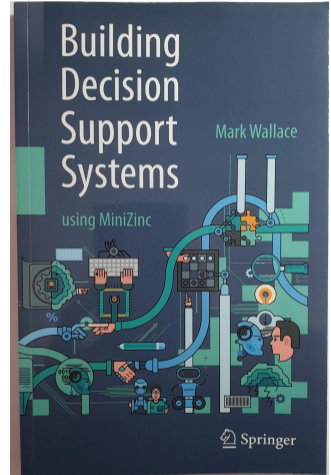
Summer Schools

**Books**

What does the world know about Constraint Programming?

# Building Decision Support Systems using MiniZinc

- Mark Wallace
- Springer, 2020
- Tool: MiniZinc
- ISBN: 978-3030417314



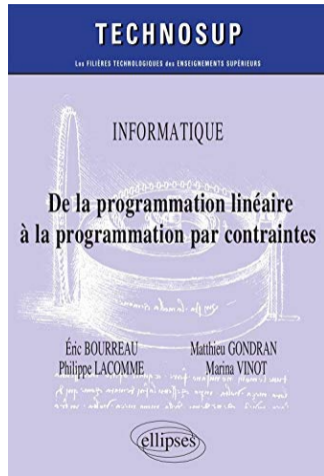
# Programmation par Contraintes

- Eric Bourreau, Matthieu Gondran, Philippe Lacomme, Marina Vinot
- ellipses, 2020
- in French
- Tool: Choco
- ISBN: 978-2340035850



# De la programmation linéaire à la programmation par contraintes

- Eric Bourreau, Matthieu Gondran, Philippe Lacomme, Marina Vinot
- ellipses, 2019
- in French
- Tool: Choco, Cplex
- ISBN: 978-2340029460



# La programmation par contraintes et les raisonnements distribués

- Imade Benelallam
- Editions Universitaires Europeennes, 2018
- in French
- ISBN: 978-6138424611

Ce livre est le résultat de notre travail de recherche qui s'articule autour de l'étude de la technologie contraintes. D'une part nous avons développé trois contributions dans le cadre des Problèmes DISCSP, AFC-ng (based-nogood Asynchronous Forward-Checking) ; C'est un algorithme qui consiste à intégrer le concept de nogood dans le protocole AFC d'origine. AILFC (Asynchronous Inter Level Forward-Checking) : Dans cette méthode nous explorons les caractéristiques du graphe de contraintes à travers une recherche asynchrone et parallèlement concurrente. AMAC (Asynchronous Maintenance of Arc-Consistency AMAC) : Cette contribution consiste en la propagation des effets d'arc-inconsistance à travers les agents. D'autre part nous avons réalisé trois approches pour les Problèmes d'Optimisation de Contraintes. ABFS (Asynchronous Breadth-First Search DCOP) : Cet algorithme consiste à transformer le graphe de contraintes du problème à résoudre en un arbre Breadth-First Search (BFS). DisDB&B (Distributed Dynamic Branch and Bound) : Une nouvelle méthode pour l'ordonnement dynamique des agents. DyBop (Dynamic Backtracking for DCOP) : Une version Asynchrone de l'algorithme DisDB&B.



Imade BENEALLAM est un chercheur en Intelligence Artificielle, spécialisé en Programmation Par Contraintes. Actuellement, il est Professeur Habilité en IA, membre Senior à l'IEEE et Directeur du Laboratoire SZM à l'Institut National de Statistique et d'Economie Appliqués de Rabat, Maroc.

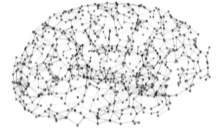


978-613-8-42461-1

LA PROGRAMMATION PAR CONTRAINTES DISCSP

Benelallam

EUE  
EDITIONS  
UNIVERSITAIRES  
EUROPEENNES



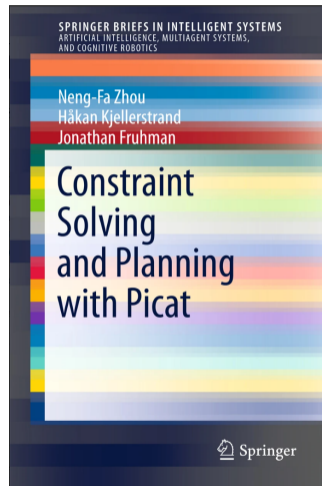
Imade Benelallam

**La programmation par  
contraintes et les  
raisonnements distribués**

Pour la résolution des problèmes de  
satisfaction et d'optimisation de contraintes

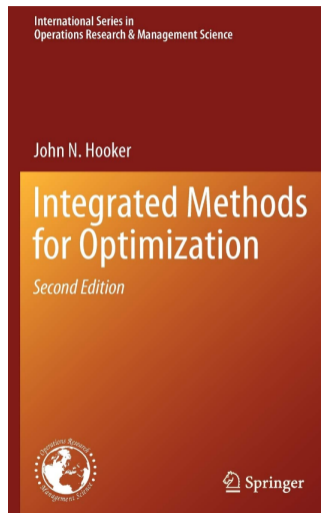
# Constraint Solving and Planning with Picat

- Neng-Fa Zhou, Håkan Kjellerstrand, Jonathan Fruhman
- Springer, 2015
- Tool: Picat
- ISBN: 978-3319258812



# Integrated Methods for Optimization

- John Hooker
- Springer, 2011
- 2nd Edition
- ISBN: 978-1461418993





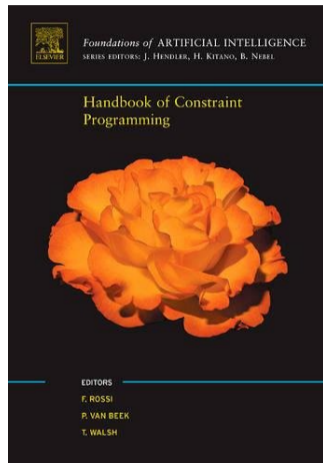
# Einführung in die Constraint-Programmierung

- Petra Hofstedt, Armin Wolf
- Springer, 2007
- Tool:
- in German
- ISBN: 978-3-540-23184-4



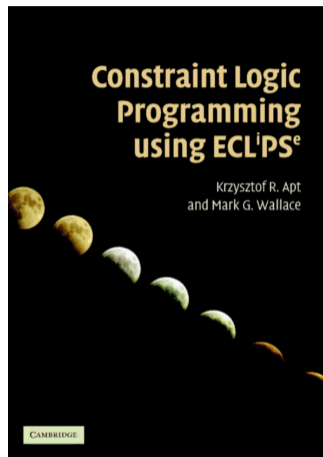
# Handbook of Constraint Programming

- Francesca Rossi, Peter van Beek, Toby Walsh
- Elsevier, 2007
- Collection of Chapters
- ISBN: 978-0444527264



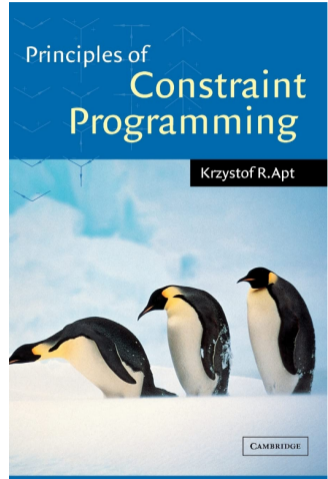
# Constraint Logic Programming using ECLiPSe

- Krzysztof Apt, Mark Wallace
- Cambridge University Press, 2006
- Tool: ECLiPSe
- ISBN: 978-0521866286



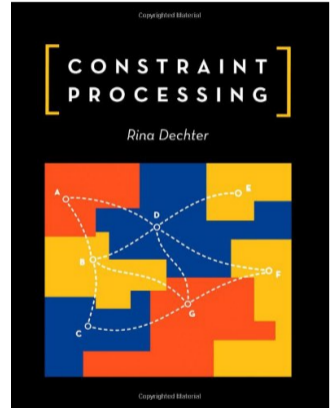
# Principles of Constraint Programming

- Krzysztof Apt
- Cambridge University Press, 2003
- ISBN: 978-0521825832



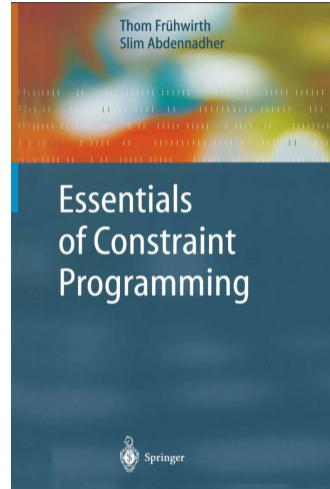
# Constraint Processing

- Rina Dechter
- Morgan Kaufmann, 2003
- ISBN: 978-1558608900



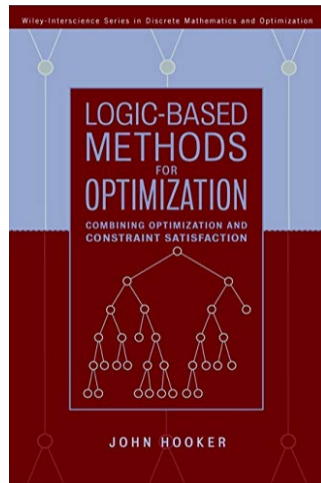
# Essentials of Constraint Programming

- Thom Frühwirth, Slim Abdennader
- Springer, 2003
- ISBN: 978-3540676232



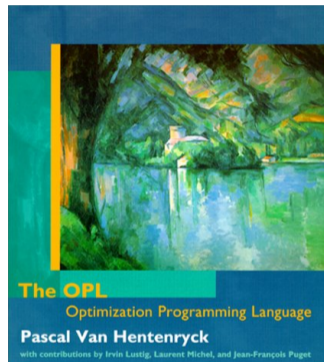
# Logic-Based Methods for Optimization: Combining Optimization and Constraint Satisfaction

- John Hooker
- Wiley, 2000
- ISBN 978-0-471-38521-9



# The OPL Optimization Programming Language

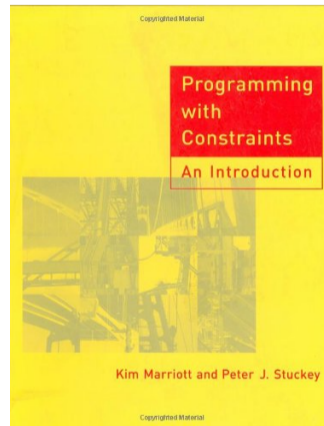
- Pascal Van Hentenryck
- MIT Press, 1999
- Tool: OPL
- 978-0262720304





# Programming with Constraints

- Kim Marriott, Peter Stuckey
- MIT Press, 1998
- Tool: CLP(R)
- 978-0262133418



# Programmation logique par contraintes

- François Fages
- ellipses, 1998
- in French
- ISBN: 978-2729846138

PROGRAMMATION  
LOGIQUE  
PAR CONTRAINTES

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François Fages

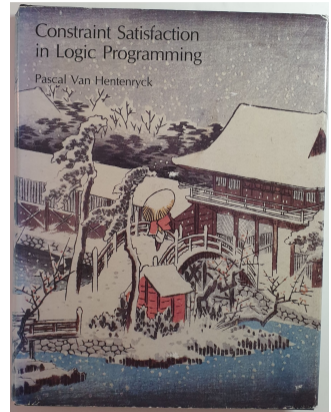


X ÉCOLE POLYTECHNIQUE



# Constraint Satisfaction in Logic Programming

- Pascal Van Hentenryck
- MIT Press, 1989
- Tool: CHIP
- ISBN: 978-0262081818



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What does the world know about Constraint Programming?

About 166,000,000 results (0.44 seconds)

The key idea of constraint programming (CP) is that it uses constraints to reduce the set of values that each variable can take. In CP, the program (or solver) keeps track of values that can appear. After every move, the search space is pruned. This means that the values that can't happen anymore are removed.

12 Jan 2023



Towards Data Science

<https://towardsdatascience.com/constraint-programmin...>

[Constraint Programming Explained - Towards Data Science](#)



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Wikipedia

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Constraint programming (CP) is a paradigm for solving combinatorial problems that draws on a wide range of techniques from artificial intelligence, ...

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Where is constraint programming used? ▾

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## Constraint programming

Constraint programming is a paradigm for solving combinatorial problems that draws on a wide range of techniques from artificial intelligence, computer science, and operations research. In constraint programming, users declaratively state the constraints on the feasible solutions for a set of decision variables. [Wikipedia](#)

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# Google NGram Viewer

Google Books Ngram Viewer



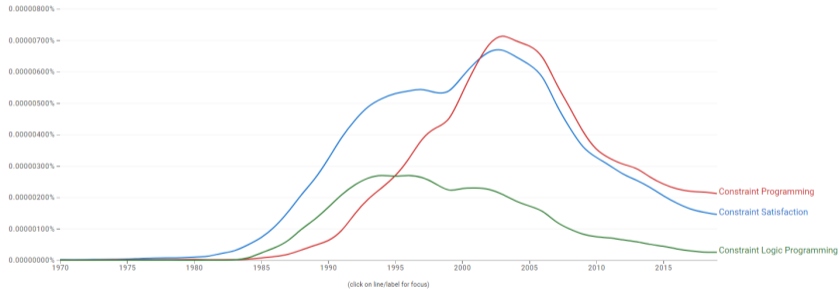
Q Constraint Satisfaction,Constraint Programming,Constraint Logic Programming X ?

1970 - 2019

English (2019)

Case-Insensitive

Smoothing



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## Constraint programming

16 languages ▼

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From Wikipedia, the free encyclopedia

This article **possibly contains original research**. Please *improve* it by verifying the claims made and adding *inline citations*. Statements consisting only of original research should be removed. *(June 2011)* (*Learn how and when to remove this template message*)

**Constraint programming (CP)**<sup>[1]</sup> is a paradigm for solving *combinatorial* problems that draws on a wide range of techniques from artificial intelligence, computer science, and operations research. In constraint programming, users declaratively state the constraints on the feasible solutions for a set of decision variables. Constraints differ from the common primitives of imperative programming languages in that they do not specify a step or sequence of steps to execute, but rather the properties of a solution to be found. In addition to constraints, users also need to specify a method to solve these constraints. This typically draws upon standard methods like chronological backtracking and constraint propagation, but may use customized code like a problem-specific branching heuristic.

Constraint programming takes its root from and can be expressed in the form of *constraint logic programming*, which embeds constraints into a logic program. This variant of logic programming is due to Jaffar and Lassez,<sup>[2]</sup> who extended in 1987 a specific class of constraints that were introduced in Prolog II. The first implementations of constraint logic programming were Prolog III, CLP(R), and CHIP.

Instead of logic programming, constraints can be mixed with functional programming, term rewriting, and imperative languages. Programming languages with built-in support for constraints include Oz (functional programming) and Kaleidoscope (imperative programming). Mostly, constraints are implemented in imperative languages via constraint solving toolkits, which are separate libraries for an existing imperative language.

### Constraint logic programming [ edit ]

Main article: *Constraint logic programming*

Constraint programming is an embedding of constraints in a host language. The first host languages used were logic programming languages, so the field was initially called *constraint logic programming*. The two paradigms share many important features, like logical variables and backtracking. Today most Prolog implementations include one or more libraries for constraint logic programming.

### Programming paradigms

- Action
- Array-oriented
- Automata-based
- Concurrent computing
  - Actor-based
  - Choreographic programming
  - Multiter programming
  - Relativistic programming
  - Structured concurrency
- Data-driven
- Data-oriented
- Declarative (contrast: Imperative)
  - Functional
    - Functional logic
    - Purely functional
  - Logic
    - Abductive logic
    - Answer set
    - Concurrent logic
    - Functional logic
    - Inductive logic
- Constraint
  - Constraint logic
    - Concurrent constraint logic
- Dataflow
  - Flow-based
  - Reactive

Constraint Programming

All Shorts Unwatched Watched For you Recently uploaded Live

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**Solving Combinatorial Optimization Problems with Constraint Programming and OsaCR**  
31K views · 6 years ago  
UCLouvain - Université catholique de Louvain  
Prof. Pierre Schaus introduces Constraint Programming and the OsaCR platform developed in his research team that he used to ...  
CC

**An Introduction To Constraint Programming - Jacob Allen**  
10K views · 2 years ago  
HackSoc  
As a programmer, computer scientist, computer engineer etc. there are many problems for which an algorithm can easily be ...  
CC  
Introduction | What is constraint programming | Constraint satisfaction | Sudoku | Constraint... 10 chapters

**Louis-Martin Rousseau: "Combining Reinforcement Learning & Constraint Programming for Combinator..."**  
1.8K views · 2 years ago  
Institute for Pure & Applied Mathematics (IPAM)  
Deep Learning and Combinatorial Optimization 2021 "Combining Reinforcement Learning and Constraint Programming for ...  
Intro | Search-based approaches | End-to-end learning-based approaches | Solving COPs by... 19 chapters

**General Principles of Constraint Programming**  
3K views · 6 years ago  
Microsoft Research  
Constraint programming (CP) is a general and powerful method to solve some combinatorial problems. This method has been ...



# ACP on youtube

The screenshot shows the YouTube channel page for the Association for Constraint Programming (ACP). At the top, there is a search bar and a microphone icon. The channel name "Association for Constraint Programming" is displayed, along with the handle "@associationforconstraintpr9021", 440 subscribers, and 53 videos. A "Subscribed" button is visible. Below the channel name, there is a navigation menu with options: HOME, VIDEOS, PLAYLISTS, COMMUNITY, CHANNELS, and ABOUT. The main content area is titled "ACP Awards" and features a grid of video thumbnails. The thumbnails include titles like "Free Book to High Programming & CP", "Deep Constrained Learning", "Christian Schulte, Jr. Monograph", and "Decision Diagrams (DDs)". Below the thumbnails, there are four categories of awards: Research Excellence Awards, Early Career Researcher Awards, Distinguished Service Awards, and Doctoral Research Awards, each with a "View full playlist" link. The second section is titled "Conference and Workshop Talks" and features a grid of video thumbnails for various events: CP 2021, CP 2021 Workshops, CPAIOR 2021, CPAIOR 2020, CP 2020, and CP 2020 Workshops. Each thumbnail includes a title, a video count, and a "View full playlist" link.

Search

Association for Constraint Programming  
@associationforconstraintpr9021 440 subscribers 53 videos  
This channel features videos from the Association for Constraint Program...  
a4cp.org

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ACP Awards

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Research Excellence Awards Early Career Researcher Awards Distinguished Service Awards Doctoral Research Awards

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Conference and Workshop Talks

Background  
CP 2021 CP 2021 Workshops CPAIOR 2021 CPAIOR 2020 CP 2020 CP 2020 Workshops

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# Reminder

- Invited Talk, Wednesday, 09:00-10:00
- Jimmy Lee, Chinese University Hong Kong
- A Tale of Two Cities: Teaching CP with Story-Telling

# Summary

- We presented an overview of Teaching Constraint Programming
- Survey results from 45 participants, 18 countries
- General resources for online courses, books
- Limited presence of CP in public space
- How can we do better?