

# Literature Survey

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Constraint Based Production Scheduling

## Acknowledgments

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## Key Points

- We are working on a survey of the existing CP & Scheduling literature
- Considers over 1200 papers
- Current version of survey available at <https://hsimonis.github.io/pthg24>

# 1 CP and Scheduling Literature Survey

## A Survey of the Existing Literature

- Joint work with Cemalettin Ozturk, MTU
- What is out there
- Where to start
- Where to publish
- I'm interested in some specific topic, what is relevant

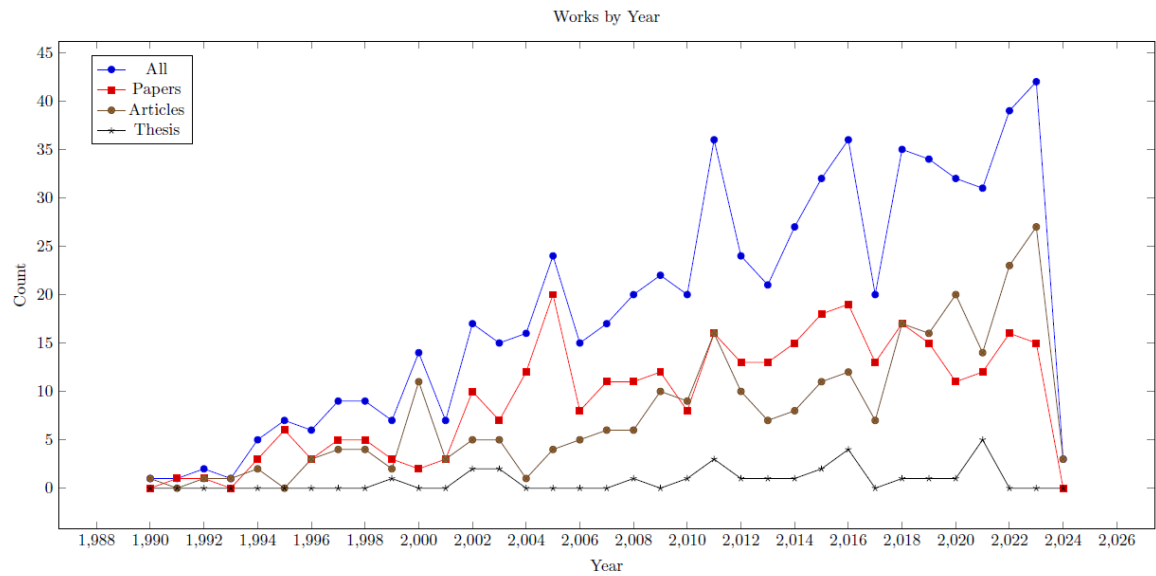
## 1.1 Methodology

### Methodology

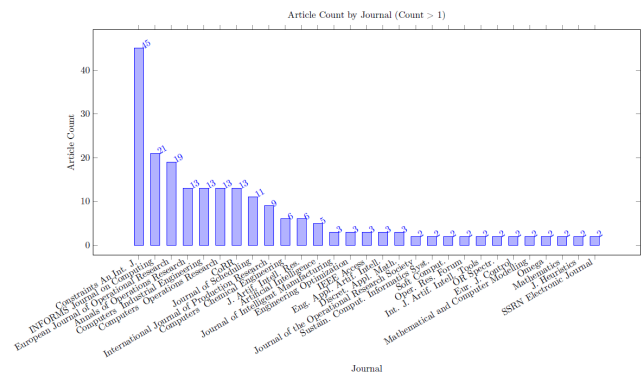
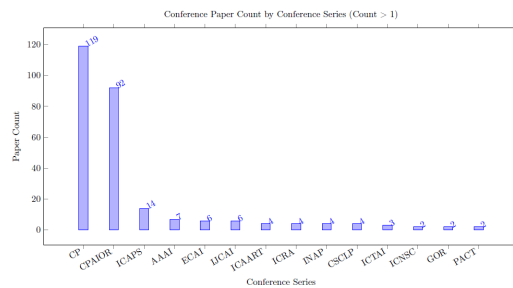
- Manually curated list of works, somewhat inclusive
- Starting with bibtex files
- Citation links through OpenCitations (open access)
- Content analysis on local copies of pdf files
- Closure of domain by analyzing missing cited and citing works
- Limited manual analysis of works (datasets, code)
- Results presented as LaTeX documents
- Open source analysis on git: <https://hsimonis.github.io/pthg24/>

## 1.2 Analysis Results

### Overall Analysis (Based on 671 Works)



### Origin of Papers/Articles



## Most Recent Articles

Table 5: Works from bibtex (Total 274)

Key	Authors	Title	LC	Cite	Year	Conference /Journal	Pages	Nr Cites	Nr Refs	b	c
ForbesHJST24 ForbesHJST24	M. Forbes Schöot J. Talmir	Combining optimisation and simulation using logic-based Benders decomposition	Yes	[217]	2024	European Journal of Operational Research	15	0	26	1314	1496
PrataAN23 PrataAN23	Bruno A. Prata Levi R. Abreu Marcelo S. Nagano	Applications of constraint programming in production scheduling problems: A descriptive bibliometric analysis	Yes	[509]	2024	Results in Control and Optimization	17	0	0	1427	1497
abs-2402-00459 abs-2402-00459 AbreuNP23 AbreuNP23	S. Nguyen Dhananjay R. Thiruvady Y. Sun M. Zhang Levi Ribeiro de Abreu Marcelo Seido Nagano Bruno A. Prata	Genetic-based Constraint Programming for Resource Constrained Job Scheduling A new two-stage constraint programming approach for open shop scheduling problem with machine blocking	Yes Yes	[469] [168]	2024 2023	CoRR International Journal of Production Research	21 20	0 1	0 47	1495 1243	1498 1499
AbreuPNP23 AbreuPNP23	Levi R. Abreu Bruno A. Prata Marcelo S. Nagano Jose M. Framinan	A constraint programming-based iterated greedy algorithm for the open shop with sequence-dependent processing times and makespan minimization	Yes	[9]	2023	Computers Operations Research	12	0	46	1244	1500
Adelgren2023 Adelgren2023	N. Adelgren Christos T. Maravelias	On the utility of production scheduling formulations including record keeping variables	Yes	[7]	2023	Computers Industrial Engineering	12	0	43	1245	1501
AfsarVPG23 AfsarVPG23	S. Afsar Camino R. Vela Juan José Palacios L. González-Rodríguez	Mathematical models and benchmarking for the fuzzy job shop scheduling problem	Yes	[8]	2023	Computers Industrial Engineering	14	0	50	1246	1502
AkramNHRS23 AkramNHRS23	Blal Omar Akram Nor Kamariah Noordin F. Hashim Mohd Farid A. Rusli Mustafa Ismail Salma Abdulrahman M. Abdalghani	Joint Scheduling and Routing Optimization for Deterministic Hybrid Traffic in Time-Sensitive Networks Using Constraint Programming	Yes	[13]	2023	IEEE Access	16	0	0	1248	1503
AlfieriGPS23 AlfieriGPS23	A. Alfieri M. Garraffa E. Pastore F. Salassa	Permutation flowshop problems minimizing core waiting time and core idle time	Yes	[15]	2023	Computers Industrial Engineering	13	0	37	1249	1504
Caballero23 Caballero23	Jordi Coll Caballero	Scheduling through logic-based tools	Yes	[127]	2023	Constraints An Int. J.	1	0	0	1287	1505
CzerniachowskaWZ23 CzerniachowskaWZ23	K. Czerniachowska R. Wichniarek K. Zywicki	Constraint Programming for Flexible Flow Shop Scheduling Problem with Repeated Jobs and Repeated Operations	Yes	[159]	2023	Advances in Science and Technology Research Journal	14	0	0	1297	1506
FahmiQ23 FahmiQ23	H. Fahmi C. Quimper	Overload-Checking and Edge-Finding for Robust Cumulative Scheduling	No	[207]	2023	INFORMS Journal on Computing	null	0	16	No	1507
Fatemi-AnarakiTFV23 Fatemi-AnarakiTFV23	S. Fatemi-Anaraki R. Tavakkoli-Moghaddam M. Fotmani B. Vahedi-Nouri	Scheduling of Multi-Robot Job Shop Systems in Dynamic Environments: Mixed-Integer Linear Programming and Constraint Programming Approaches	Yes	[212]	2023	Omega	15	7	60	1312	1508
GhasemiMH23 GhasemiMH23	S. Ghasemi R. Tavakkoli-Moghaddam M. Hamid	Operating room scheduling by emphasising human factors and dynamic decision-making styles: a constraint programming method	No	[242]	2023	International Journal of Systems Science: Operations Logistics	null	0	104	No	1509
GuoZ23 GuoZ23	P. Guo J. Zhu	Capacity reservation for humanitarian relief: A logic-based Benders decomposition method with subgradient cut	Yes	[269]	2023	European Journal of Operational Research	29	0	112	1325	1510
GurPAE23 GurPAE23	S. Güç M. Pinarbası Haci Mehmet Alakas E. Eren	Operating room scheduling with surgical team: a new approach with constraint programming and goal programming	Yes	[270]	2023	Central Eur. J. Oper. Res.	25	1	40	1327	1511
IsikYA23 IsikYA23	Eyüp Ensar Isik Soyda Topaloglu Yildiz Özge Satir Akpınar	Constraint programming models for the hybrid flow shop scheduling problem and its extensions	Yes	[321]	2023	Soft Comput.	28	0	127	1350	1512
JuvinHL23a JuvinHL23a	C. Juvin L. Houslin P. Lopez	Logic-based Benders decomposition for the preemptive flexible job-shop scheduling problem	Yes	[331]	2023	Computers Operations Research	17	0	40	1355	1513
LacknerMMWW23 LacknerMMWW23	M. Lackner C. Mrkvička N. Musliu D. Walkiewicz F. Winter	Exact methods for the Oven Scheduling Problem	Yes	[374]	2023	Constraints An Int. J.	42	0	32	1371	1514

## Automatically Extracted Article Features

Table 6: Automatically Extracted ARTICLE Properties (Requires Local Copy)

Work	Pages	Concepts	Classification	Constraints	Prog Languages	CP Systems	Areas	Industries	Benchmarks	Algorithm	a	c
Laborie03 [369]	38	task, precedence, order, cmax, machine, job, activity, re-scheduling, setup-time, release-date, inventory, preempt, job-shop, resource, scheduling, make-span		cycle, table constraint, cumulative, disjunctive	C++	Ilog Scheduler			benchmark	edge-finding, not-last, energetic reasoning, not-first, time-tabling edge-finding	1201	1731
LaborieRSV18 [372]	41	release-date, job-shop, resource, activity, precedence, sequence dependent setup, earliness, scheduling, machine, inventory, transportation, manpower, due-date, setup-time, batch process, order, tardiness, flow-shop, job, make-span, re-scheduling, task, distributed	psplib, parallel machine, RCPSP	alternative constraint, cumulative, noOverlap, disjunctive, span constraint, cycle, alwaysIn, endBeforeStart	C, Python, C++, Java	CHIP, Geocode, Ilog Solver, Cplex, Ilog Scheduler, OPL, Choco Solver, CPO	semiconductor, railway, container terminal, satellite, robot, pipeline, aircraft, shipping line	chemical industry, petrochemical industry	real-world, CSPLib, benchmark		1080	1610
LacknerMMWW23 [374]	42	release-date, batch process, setup-time, job, order, due-date, tardiness, scheduling, make-span, machine, task, lateness, job-shop, earliness	parallel machine, OSP, single machine	alternative constraint, disjunctive, bin-packing, noOverlap, cumulative, endBeforeStart		Chuffed, Cplex, OPL, CPO, OR-Tools, MiniZinc, Gurobi	semiconductor, oven scheduling	electronics industry, steel industry, manufacturing industry	random instance, industrial partner, benchmark, instance generator, zenodo, real-life	time-tabling	984	1514
LammaMM97 [377]	15	job-shop, resource, scheduling, precedence, order, task, job, distributed, no-wait		circuit, disjunctive	C++, Prolog	ECLiPSe, OPL, CHIP	railway				1230	1760
LetortCB18 [385]	52	machine, make-span, job, precedence, resource, scheduling, task, order	psplib	cumulative, cycle, bin-packing	Java, Prolog	Choco Solver, CHIP, SICStus			generated instance, Roadef, benchmark, random instance	energetic reasoning, sweep, edge-finding	1110	1640
LiW08 [386]	18	precedence, activity, resource, completion-time, setup-time, make-span, scheduling, machine, preempt, job-shop, no preempt, job, re-scheduling, open-shop, due-date, task, order	RCPSP	disjunctive, cycle, bin-packing		Ilog Solver, OZ, Cplex, ECLiPSe, OPL, CHIP					1178	1708
LiesM08 [388]	12	preempt, resource, scheduling, machine, job, activity, precedence, job-shop, task, make-span, order, cmax	RCPSP, psplib	disjunctive, cumulative	C++	OZ			benchmark	edge-finding	1179	1709
LimtanyakulS12 [393]	32	release-date, scheduling, order, completion-time, job, resource, activity, tardiness, machine, due-date, precedence		table constraint, disjunctive, bin-packing, cumulative		OZ, Ilog Scheduler, Cplex	robot, automotive	automotive industry	random, real-life, generated instance, industrial partner, benchmark	not-last, energetic reasoning, not-first, edge-finding	1133	1663
LombardiM10a [402]	30	due-date, distributed, order, job, make-span, release-date, re-scheduling, task, completion-time, resource, activity, precedence, preempt, scheduling, machine	TCSP	cycle, span constraint, cumulative, disjunctive, table constraint	C	Cplex			real-world, benchmark, real-life	sweep	1160	1690

## Manually Extracted Article Features

Table 4: Manually Defined PAPER Properties

Key	Title (Local Copy)	CP System	Bench	Links	Data Avail	Sol Avail	Code Avail	Related To	Classification	Constraints	a	b
AalhanPG23 AalhanPG23 [1]	Optimization of Short-Term Underground Mine Planning Using Constraint Programming	CP Opt	real-world	1	n		n			?	1	325
Bit-Monnot23 Bit-Monnot23 [36]	Enhancing Hybrid CP-SAT Search for Disjunctive Scheduling	ARIES CP Opt OR-Tools	real-world, github, benchmark	1	y		y	-	JSSP OSSP	-	2	371
EfthymiouY23 EfthymiouY23 [194]	Predicting the Optimal Period for Cyclic Hoist Scheduling Problems	Mistral OR-Tools	benchmark, random instance, generated instance, real-life, industrial instance	3	n		n	-	CHSP	-	3	415
JuvinHHL23 JuvinHHL23 [328]	An Efficient Constraint Programming Approach to Preemptive Job Shop Scheduling	CP Opt Mistral	supplementary material, github, benchmark	6	ref		y		PJSSP	endBeforeStart span noOverlap	4	476
JuvinHL23 JuvinHL23 [330]	Constraint Programming for the Robust Two-Machine Flow-Shop Scheduling Problem with Budgeted Uncertainty	CP Opt Cplex	real-world	0	ref		n	-	Perm FSSP	endBeforeStart noOverlap sameSequence cumulative	5	477
KameugneFND23 KameugneFND23 [339]	Horizontally Elastic Edge Finder Rule for Cumulative Constraint Based on Slack and Density	?	benchmark	5	BL PSPIib		n	-	RCPSPs		6	480
KimCMLLP23 KimCMLLP23 [345]	Iterated Greedy Constraint Programming for Scheduling Steelmaking Continuous Casting	Gurobi OR-Tools	real-world, benchmark, zenodo	0	y		n	-	SCC	alternative noOverlap	7	485
Mehdizadeh-Somarini23 Mehdizadeh-Somarini23 [430]	A Constraint Programming Model for a Reconfigurable Job Shop Scheduling Problem with Machine Availability	CP Opt	random instance	0	n		n	-	JSSP RMS	alternative endBeforeStart noOverlap	8	529
PerezGSL23 PerezGSL23 [495]	A Constraint Programming Model for Scheduling the Unloading of Trains in Ports Search Approaches	custom	real-world, generated instance	0	n		n	-	SUTP	table disjunctive	9	553
PovedaAA23 PovedaAA23 [506]	Partially Preemptive Multi Skill/Mode Resource-Constrained Project Scheduling with Generalized Precedence Relations and Calendars	CP Opt MiniZinc Chuffed	real-world, github, benchmark, industrial instance, real-life	4	y		y		PP-MS- MMRCPSP/max- cal		10	557
SquillaciPR23 SquillaciPR23 [564]	Scheduling Complex Observation Requests for a Constellation of Satellites: Large Neighborhood	Cplex Studio	github, benchmark	2	y		n	-	EOSP	?	11	584
TardivoDFMP23 TardivoDFMP23 [575]	Constraint Propagation on GPU: A Case Study for the Cumulative Constraint	MiniCPP MiniZinc	bitbucket, github, benchmark, real-world	9	PSPLib BL Pack		y	-	RCPSP	cumulative	12	590
TasselGS23 TasselGS23 [576]	An End-to-End Reinforcement Learning Approach for Job-Shop Scheduling Problems Based on Constraint Programming	custom Choco	industrial instance, real-world, supplementary material, github, benchmark	0	ref		y	-	JSSP	noOverlap	13	591
WangB23 WangB23 [629]	Dynamic All-Different and Maximal Cliques Constraints for Fixed Job Scheduling	FaCiLe	real-world, random instance	0	(y)		n	[628]	FJS	-	14	620
YuraszeckMC23 YuraszeckMC23 [640]	A competitive constraint programming approach for the group shop scheduling problem	CP Opt	github, benchmark	0	ref		n	-	GSPP	noOverlap endBeforeStart	15	633

## Extracted Features: Application Areas

Table 16: Works for Concepts of Type ApplicationAreas

Type	Keyword	High	Medium	Low
ApplicationAreas	COVID	GuoZ23 [269]	GelbingerKKMMW21 [234]	Fatemi-AnarakiTFV23 [212], Mehdizadeh-Somarini23 [430], GurPAE23 [270], JuvinHL23a [331], OujanaAYB22 [487], Lemos21 [381]
ApplicationAreas	HVAC	LimHTB16 [390], LimBTBB15 [391], GrimesIOS14 [289]		
ApplicationAreas	agriculture			AkramNHRSA23 [13], BenderWS21 [84], HamPK21 [275], Astrand21 [35], QinWLSLS21 [511], AstrandOF21 [36], MojaY20 [431]
ApplicationAreas	aircraft	PohlAK22 [502], WangB20 [628], TranDRFWOV16 [506], Fahimi16 [205], BajestaniB13 [42], LombardiM12 [405], BajestaniB11 [41], FrankK05 [219], ArtionchineB05 [54], SimoniS99 [555]	WangB23 [629], GombolayWS18 [253], Ham18 [273], SimoniS07 [559], SakoutW00 [520], SimoniS95a [556]	PrataAN23 [509], PovedaAA23 [506], Adalgren2023 [7], EtmianieslahaniGNMS22 [202], ElciOH22 [195], ZarandiASC20 [654], HauderBRPA20 [283], abs-1902-09243 [283], Hooker19 [312], LaborieRSV18 [372], HookerH17 [314], TraaAB16 [594], Lombardi10 [398], Laborie09 [370], KovacsB08 [355], KroggLPJ07 [698], MartinPY01 [427], SimoniSCK00 [560], CrulanK98 [264], Darby-DownmanLM297 [163], Wallace96 [625], SimoniS93 [557], SimoniS92 [661]
ApplicationAreas	automotive		GuoZ23 [269], YuraszeckMPV22 [650], EmdeZD22 [199], Groleaz21 [261], LimtanvakuS12 [393], SunLYL10 [567], Lombardi10 [398], BarlattCG08 [52], SchidW00 [532]	PovedaAA23 [509], NaderiRR23 [460], CzerniachowskaW223 [159], NaderiBZ22 [462], NaderiBZ22a [456], AntuoriHHEN21 [22], HubnerGSV21 [318], AbreuAPNM21 [159], KoehlerBFFHPSSS21 [348], ViKH121 [623], BarzegaranZP20 [61], GelbingerMM19 [236], abs-1911-04766 [235], BonfettiZLM16 [113], Stala15a [552], SchnellH15 [533], AlesioNBG14 [181], HarjunoskiMBC14 [270], BeniniBGM06 [88], KovacsV06 [364], Wallace96 [625]
ApplicationAreas	cable tree	KoehlerBFFHPSSS21 [348]		BeldiceanuC94 [78]
ApplicationAreas	car manufacturing		AntuoriHHEN21 [22]	abs-2312-13683 [497], PerezGSL23 [499], TouatBT22 [592]
ApplicationAreas	container terminal	QinDCS20 [512], SacramentoSP20 [526]	LaborieRSV18 [372]	CrowlaseriDS20 [142], WallaceY20 [627], ZarandiASC20 [654], FallahiAC20 [299], Hooker19 [312], CrowlaseriDMS16 [140], Dejemeppe16 [172], DejemeppeCS15 [173], NovasH12 [476], CorreaLR07 [158], LimRX04 [889]
ApplicationAreas	crew-scheduling	ZarandiASC20 [654], PourDERB18 [505]	BourreauCGLT22 [118], Zahouti21 [652], GombolayWS18 [253], Massou01 [429], Touratiane95 [593]	NaderiRR23 [469], WangH23 [629], Adalgren2023 [7], EtmianieslahaniGNMS22 [202], NaderiBZ22a [456], NaderiBZ22 [457], HeinzNVH22 [295], ElciOH22 [195], Lemos21 [381], MokhtarzadehTFN20 [443], TangLWSK18 [574], HookerH17 [314], DoulabRP16 [100], LipovetzkyBPS14 [394], HachemiGH11 [273], MilanoW09 [611], WedDB09 [643], MilanoW08 [440], BeldiceanuC92 [79], JainC01 [523], SimoniSCK00 [560]
ApplicationAreas	dairies			Bartak02 [54], Bartak02a [53]
ApplicationAreas	dairy	EscobetPQPRA19 [201]	PrataAN23 [509], HarjunoskiMBC14 [279]	Groleaz21 [261]
ApplicationAreas	datacenter	HermenierDLT1 [300]		Zahouti21 [652], GalleguillosKSB19 [225], Madi-WambaLOBM17 [418], LetortI13 [382], IfrimOS12 [320], LetortBC12 [383]
ApplicationAreas	datacentre		HurleyOS16 [319]	
ApplicationAreas	day-ahead market			
ApplicationAreas	deep space			
ApplicationAreas	drone	MontemanniD23a [446], MontemanniD23 [447], Ham18 [273]		HebrardALLCMR22 [285], GuoZ23 [269], JuvinHL23a [331], Adalgren2023 [7], ShaikhK23 [547], EmdeZD22 [199], Astrand21 [35], AstrandOF21 [36], AntuoriHHEN21 [22], ZarandiASC20 [654], Ham18a [274]

## Prolific Authors

Table 8: Co-Authors of Articles/Papers

Author	Nr Works	Nr Cites	Entries
J. Christopher Beck	49	701	LuoB22 [416], ZhangBB22 [658], TangB20 [573], RoshanaeiBAUB20 [621], TranPZLDB18 [597], TranVNB17 [599], TranVNB17a [600], CobanHB17 [154], HechHB16 [114], KubiB [365], TranAB16 [529], TranWDPVOVB16 [201], LuoV LDM16 [415], TranDRFWOVB16 [599], BajestaniB15 [43], KoschB14 [353], IerakhovTDB14 [581], LouieVNB14 [412], HeinzSB13 [294], HeinzKB13 [221], BajestaniB13 [42], TranTDB13 [598], HeinzB12 [290], IerakhovDOB12 [580], TranB12 [595], ZarandiB12 [213], KovacsB11 [356], BeckFW11 [69], HeckmanB11 [289], BajestaniB11 [41], WuBB09 [643], BidotVLB09 [94], CarchraeB09 [31], WatsonB08 [632], KovacsB08 [355], BeckW07 [74], Beck07 [64], KovacsB07 [354], Beck06 [63], CarchraeBF05 [132], WuBB05 [642], BeckW05 [72], BeckW04 [71], BeckR03 [70], BeckPS03 [69], BeckF00 [68], Beck99 [62], Beck98 [67], BeckDF97 [65]
Michela Milano	31	297	BorghesiBLMB18 [115], BonfiettiZLM16 [113], BridiBLMB16 [120], BridiLBBM16 [121], LombardiBM15 [399], BartoliniBBLM14 [60], BonfiettiLM14 [111], BonfiettiLBM14 [109], BonfiettiLM13 [110], LombardiM13 [406], LombardiMB13 [407], LombardiM12 [405], BonfiettiLBM12 [108], LombardiM12a [404], BonfiettiM12 [112], BonfiettiLBM11 [107], LombardiBMB11 [400], BeniniLMR11 [90], Milano11 [438], LombardiM10 [403], LombardiM10a [402], LombardiMRB10 [408], LombardiM09 [401], RuggieroBBMA09 [525], MilanoW09 [411], BeniniLMR08 [89], BeniniBGM06 [88], MilanoW06 [440], MilanoOR02 [439], LammaMM97 [377], BrusoniCLMMT96 [123]
Andreas Schutt	27	322	YangSS19 [644], KreterSSZ18 [364], GoldwasserS18 [251], MusluSS18 [455], KreterSS17 [363], YoungFS17 [646], GoldwasserS17 [250], SchuttS16 [543], SzorelS16 [529], KreterSS15 [362], EvansSH15 [263], EvansSH15a [264], SchuttFSW15 [542], ThiruvadyWGS14 [589], GuSSWC14 [266], SchuttFS13 [537], SchuttFS13a [536], GuSS13 [265], SchuttFSW13 [541], ChuGNSW13 [147], SchuttCSW12 [535], SchuttFSW11 [540], Schutt11 [534], SchuttW10 [544], abs-1009-0347 [539], SchuttFSW09 [538], SchuttW805 [545]
Michele Lombardi	25	194	BorghesiBLMB18 [115], CauwelaertLS18 [141], BonfiettiZLM16 [113], BridiBLMB16 [120], BridiLBBM16 [121], LombardiBM15 [399], BartoliniBBLM14 [60], BonfiettiLM14 [111], BonfiettiLBM14 [109], BonfiettiLM13 [110], LombardiM13 [406], LombardiMB13 [407], LombardiM12 [405], BonfiettiLBM12 [108], LombardiM12a [404], BonfiettiLBM11 [107], LombardiBMB11 [400], BeniniLMR11 [90], LombardiM10 [403], LombardiM10a [402], LombardiM09 [398], LombardiMRB10 [408], LombardiM09 [401], BeniniLMR08 [89], HoeveCSL07 [699]
Peter J. Stuckey	24	453	YangSS19 [644], DemirovicS18 [127], KreterSSZ18 [364], MusluSS18 [455], KreterSS17 [363], SchuttS16 [543], BlomPS16 [100], KreterSS15 [362], BurlLPS15 [124], SchuttFSW15 [542], BlomPS14 [99], LipovetzkyBPS14 [394], GuSSWC14 [266], SchuttFS13 [537], SchuttFS13a [536], GuSS13 [265], SchuttFSW13 [541], SchuttCSW12 [535], GuSW12 [267], SchuttFSW11 [540], BandaSC11 [170], abs-1009-0347 [539], SchuttFSW09 [538], OhrimenkoSC09 [483]
John N. Hooker	19	1316	Eic(OH)2 [195], Hooker19 [312], Hooker17 [311], HookerH17 [314], HechingH16 [288], CireCH16 [150], HarjunoskiMBC14 [279], CireCH13 [149], CobanH11 [153], CobanH10 [152], Hooker10 [310], Hooker07 [309], Hooker06 [308], Hooker05 [306], Hooker05a [307], Hooker04 [305], Hooker03 [318], Hooker02 [315], Hooker00 [304]
Emmanuel Hebrard	17	71	JuvinHH123 [325], HebrardALLCMR22 [285], AntuoriHHEN21 [22], ArtiguesHQT21 [32], GodetLHS20 [247], AntuoriHHEN20 [21], HebrardHJMPV16 [286], SimoninAHL15 [555], SialaAH15 [553], GrimesH15 [258], BossiereHMQW14 [93], SimoninAHL12 [554], BillautHL12 [95], GrimesH11 [257], GrimesH10 [256], GrimesHM09 [259], HebrardTW05 [287]
Pierre Lopez	17	90	JuvinHH123 [325], JuvinHL23a [331], JuvinHL23 [330], HebrardALLCMR22 [285], JuvinHL22 [329], Polo-MejiaALB20 [503], NattafHKAL19 [466], NattafAL17 [463], NattafALR16 [464], SimoninAHL15 [555], NattafAL15 [462], SimoninAHL12 [554], BillautHL12 [95], LahimerLH11 [375], Tro-geHL11 [262], LopezARY09 [410], TorresL00 [501]
Christian Artigues	16	203	PovedaAA23 [506], PobiAKR22 [502], HebrardALLCMR22 [285], ArtiguesHQT21 [32], Polo-MejiaALB20 [503], NattafHKAL19 [466], NattafAL17 [463], NattafALR16 [464], SimoninAHL15 [555], NattafAL15 [462], SialaAH15 [553], SimoninAHL12 [554], NeronABCD06 [481], DemasseoyAM05 [178], ArtiguesBF04 [30], ArtiguesR00 [33]
Pierre Schaus	15	79	CauwelaertUS20 [142], ThomasKS20 [586], HoundjBSW19 [316], CappartTSR18 [130], CauwelaertLS18 [141], CappartS17 [129], CauwelaertDMS16 [140], DejemeppeCS15 [173], GayHLS15 [229], GayHS15 [230], GayHS15a [231], HoundjISWD14 [317], GaySS14 [232], SchausHM-CMD11 [531], SchausF08 [530]
Helmut Simonis	15	154	ArmstrongGOS22 [27], ArmstrongGOS21 [26], AntunesABD20 [20], AntunesABD18 [19], HurleyOS16 [319], GrimesOS14 [260], IfrimOS12 [520], SimonisH11 [562], Simonis07 [559], SimonisCK00 [560], Simonis99 [558], SimonisC95 [561], Simonis95 [557], Simonis95a [556], DincheasSH90 [184], Madi-WambaLOBM17 [418], Madi-WambaB16 [417], LetortCB15 [385], LetortCB13 [384], LetortBC12 [483], ClercqPBJ11 [151]
Nicolas Beldiceanu	13	274	BeldiceanuCDP11 [80], BeldiceanuCP08 [81], PoderB08 [500], BeldiceanuP07 [82], PoderB04 [501], BeldiceanuC02 [79], AggounB93 [9]
Luca Benini	13	146	BorghesiBLMB18 [115], BridiBLMB16 [120], BridiLBBM16 [121], BonfiettiLBM14 [109], LombardiMB13 [407], BonfiettiLBM12 [108], BonfiettiLBM11 [107], LombardiBMB11 [400], BeniniLMR11 [90], LombardiMRB10 [408], RuggieroBBMA09 [525], BeniniLMR08 [89], BeniniBGM06 [88], LunardiBLRV20 [413], LaborieHSV18 [372], LaborieLSa [371], MelgarejoLS15 [11], VilhimLS15 [621], Laborie09 [370], BidotVLB09 [94], BaptisteLPN06 [47], NeronABCD06 [481], GodardLNO5 [245], Laborie03 [369], FocacciLN00 [215]
Philippe Laborie	12	513	LunardiBLRV20 [413], LaborieHSV18 [372], LaborieLSa [371], MelgarejoLS15 [11], VilhimLS15 [621], Laborie09 [370], BidotVLB09 [94], BaptisteLPN06 [47], NeronABCD06 [481], GodardLNO5 [245], Laborie03 [369], FocacciLN00 [215]
Philippe Baptiste	11	403	BaptisteB18 [46], Baptiste09 [45], BaptisteLPN06 [47], NeronABCD06 [481], ArtouchineB05 [34], Baptiste02 [44], BaptistePN01 [50], BaptisteP00 [49], PapaB98 [492], BaptisteP97 [48], PapeB97 [491]
Roman Barták	11	88	SvancaraB22 [569], JelinekB16 [325], BartakV15 [59], Bartak14 [55], BartakS11 [57], BartakCS10 [56], BartakSR10 [58], VilimBC05 [620], VilimBC04 [619], Bartak02 [54], Bartak02a [53]

## 1.3 Limitations

### Limitations

- Limited coverage by OpenCitations
- Difficult to have local access to some publication types (book, incollection)
- Heavily biased towards publications in English
- More powerful NLP analysis of works possible?

### Problem: Count for Most Cited Papers

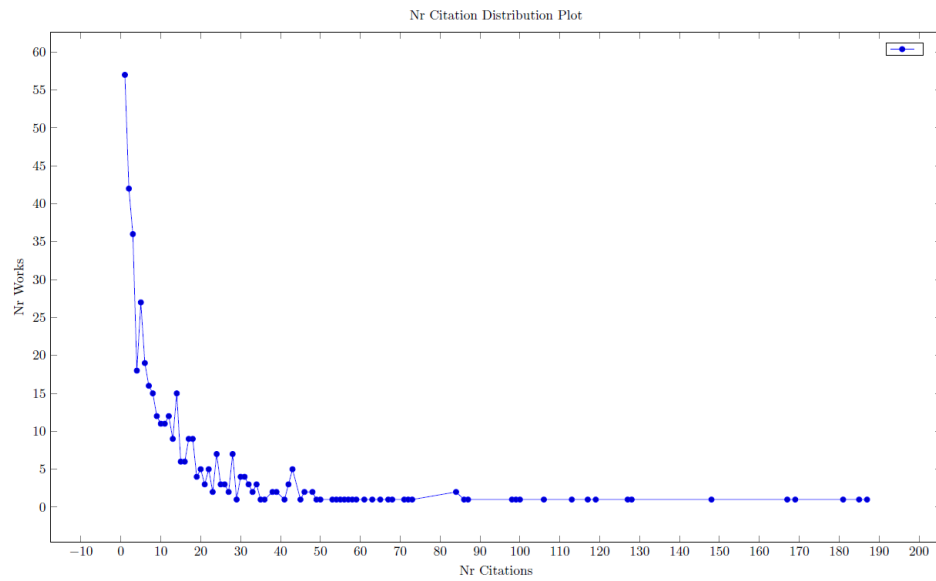
Table 9: Works from bibtex (Total 30)

Key	Authors	Title	LC	Cite	Year	Conference / Journal	Pages	Nr Cites	Nr Refs	b	c	
JainM99	JainM99	A. Jain, S. Meeran	Deterministic job-shop scheduling: Past, present and future	Yes	[322]	1999	European Journal of Operational Research	45	490	150	1352	1753
HarjunkskiMBC14	I. Harjunkski, Christos T. Maravelias, P. Bongers, Pedro M. Castro, S. Engell, Ignacio E. Grossmann, John N. Hooker, C. Méndez, G. Sami, J. Wassenick	Scope for industrial applications of production scheduling models and solution methods	Yes	[279]	2014	Computers Chemical Engineering	33	381	176	1335	1649	
BlazewiczDP96	J. Blazewicz, W. Domschke, E. Pesch	The job shop scheduling problem: Conventional and new solution techniques	Yes	[125]	1996	European Journal of Operational Research	33	344	127	1278	1762	
HookerO03	HookerO03	John N. Hooker, G. Ottosson	Logic-based Benders decomposition	Yes	[313]	2003	Mathematical Programming Book	28	317	0	1347	1729
BaptistePN01	BaptistePN01	P. Baptiste, Claude Le Pape, W. Nuijten	Constraint-Based Scheduling	No	[50]	2001		null	296	0	No	n/a
JainG01	JainG01	V. Jain, Ignacio E. Grossmann	Algorithms for Hybrid MILP/CP Models for a Class of Optimization Problems	Yes	[323]	2001	INFORMS Journal on Computing	19	279	23	1351	1738
AggounB93	AggounB93	A. Aggoun, N. Beldiceanu	Extending CHIP in order to solve complex scheduling and placement problems	Yes	[9]	1993	Mathematical and Computer Modelling Book	17	187	11	1247	1767
Hooker00	Hooker00	John N. Hooker	Logic Based Methods for Optimization: Combining Optimization and Constraint Satisfaction	No	[304]	2000		null	185	0	No	n/a
Hooker07	Hooker07	John N. Hooker	Planning and Scheduling by Logic-Based Benders Decomposition	Yes	[309]	2007	Operations Research	29	181	19	1345	1715
HarjunkskiG02	HarjunkskiG02	I. Harjunkski, Ignacio E. Grossmann	Decomposition techniques for multistage scheduling problems using mixed-integer and constraint programming methods	Yes	[275]	2002	Computers Chemical Engineering	20	169	11	1334	1733
BeldiceanuC94	BeldiceanuC94	N. Beldiceanu, E. Contejean	Introducing Global Constraints in CHIP	Yes	[78]	1994	Mathematical and Computer Modelling	27	167	8	1271	1765
LaborieRSV18	LaborieRSV18	P. Laborie, J. Rogerie, P. Shaw, P. Villin	IBM ILOG CP optimizer for scheduling - 20+ years of scheduling with constraints at IBM/ILOG	Yes	[372]	2018	Constraints An Int. J.	41	148	35	1370	1610
Laborie03	Laborie03	P. Laborie	Algorithms for propagating resource constraints in AI planning and scheduling: Existing approaches and new results	Yes	[369]	2003	Artificial Intelligence	38	128	10	1369	1731
OhrimenkoSC09	OhrimenkoSC09	O. Ohrimenko, Peter J. Stuckey, M. Codish	Propagation via lazy clause generation	Yes	[453]	2009	Constraints An Int. J.	35	127	15	1417	1702
KuB16	KuB16	W. Ku, J. Christopher Beck	Mixed Integer Programming models for job shop scheduling: A computational analysis	Yes	[365]	2016	Computers Operations Research	9	119	17	1367	1690
Rodriguez07	Rodriguez07	J. Rodriguez	A constraint programming model for real-time train scheduling at junctions	Yes	[520]	2007	Transportation Research Part B: Methodological	15	117	6	1430	1716
LiW08	LiW08	H. Li, K. Womer	Scheduling projects with multi-skilled personnel by a hybrid MILP/CP benders decomposition algorithm	Yes	[386]	2008	Journal of Scheduling	18	113	31	1374	1708
CorreaLR07	CorreaLR07	Ayoub Insa Corréa, A. Langevin, L. Rousseau	Scheduling and routing of automated guided vehicles: A hybrid approach	Yes	[158]	2007	Computers Operations Research	20	106	20	1296	1714
MengZRLZ20	MengZRLZ20	L. Meng, C. Zhang, Y. Ren, B. Zhang, C. Lv	Mixed-integer linear programming and constraint programming formulations for solving distributed flexible job shop scheduling problem	Yes	[435]	2020	Computers Industrial Engineering	13	100	62	1393	1574
BensanaLV99	BensanaLV99	E. Bensana, M. Lemaitre, G. Verfaillie	Earth Observation Satellite Management	Yes	[91]	1999	Constraints An Int. J.	7	99	0	1276	1752

## OpenCitation Count Compared to Google Scholar

Key	Type	Google	OC	Ratio
JainM99	article	1116	490	2.28
HarjunkskiMBC14	article	588	381	1.54
BlazewiczDP96	article	796	344	2.31
BaptistePN01	book	1039	296	3.51
AggounB93	article	502	187	2.68
LaborieRSV18	article	309	148	2.09
BensanaLV99	article	251	99	2.54
DincbasSH90	article	271	86	3.15
Thorsteinsson01	paper	205	67	3.06
DincbasSH88	paper	287	0	☹

## Problem: Citation Count Distribution



## 2 Summary

### Summary

- Use the survey to find
  - Most important works on Constraint Based Scheduling
  - Specialized papers on the constraint reasoning for scheduling
  - Works in specific application domains or specific industries