

Literature Survey

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Constraint Based Production Scheduling

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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

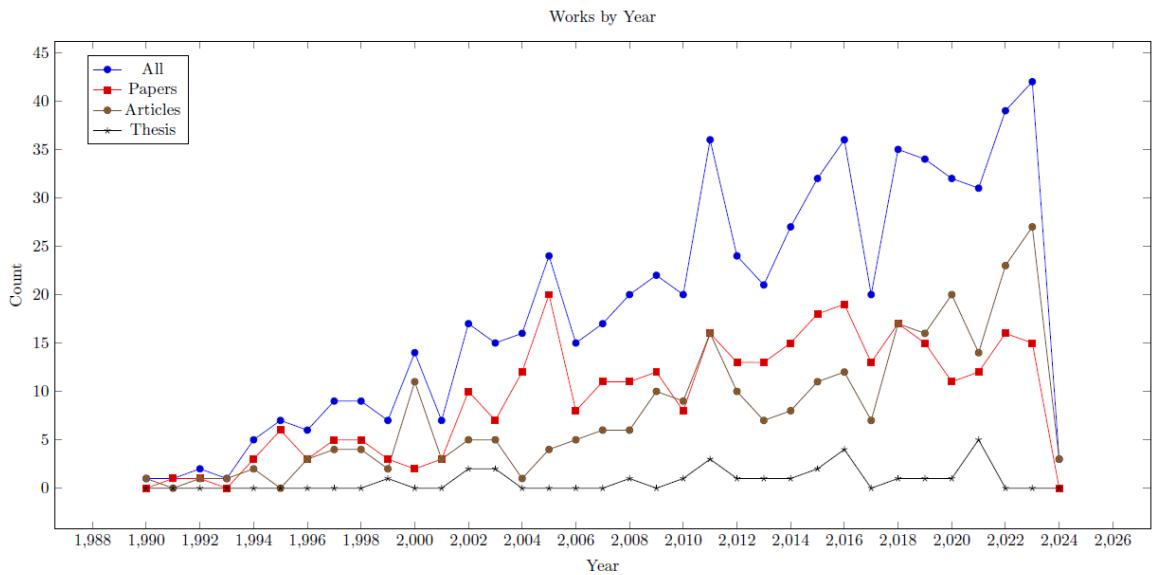
1.1 Methodology

Methodology

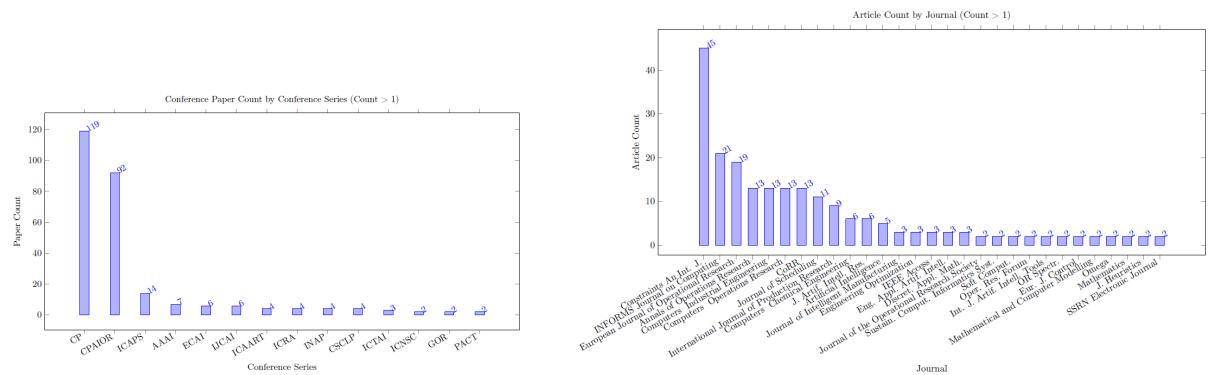
- Manually curated list of works, somewhat inclusive
- Starting with bibtex files
- Citation links through OpenCitations (open access)
- Content analysis on local copies of pdf files
- Closure of domain by analyzing missing cited and citing works
- Limited manual analysis of works (datasets, code)
- 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 [M. Harris [H. Jansen [F.A. van der Schoot [T. Tamis]	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	S. Nguyen [Dhananjay R. Thiruvady [Y. Sun [M. Zhang]	Genetic-based Constraint Programming for Resource Constrained Job Scheduling	Yes	[469]	2024	CoRR	21	0	0	1495	1498
AbreuNP23 [AbreuNP23]	Levi Ribeiro de Abreu [Marcelo Seido Nagano [Bruno A. Prata]	A two-stage constraint programming approach for open shop scheduling problem with machine blocking	Yes	[168]	2023	International Journal of Production Research	20	1	47	1243	1499
AbreuPNF23 AbreuPNF23	Levi R. Abreu [Bruno A. Prata [Marcelo S. Nagano [José M. Framinan]	A constraint programming-based iterated greedy algorithm for the open shop with sequence-dependent processing times and makespan minimization	Yes	[3]	2023	Computers & Operations Research	12	0	46	1244	1500
Adelgren2023 Adelgren2023	N. Adelgren [Christen T. Maravillas]	On the use of production scheduling formulations including recent developments	Yes	[7]	2023	Computers & Industrial Engineering	12	0	43	1245	1501
AksarVP23 AksarVP23	S. Aksar [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
AkramNHSA23 AkramNHSA23	Hilal Omar Akrami [Nor Kamariah Noordin [F. Hashmi [Mold Fadlee A. Rasid [Mustafa Ismail [Salman Abdurrahman M. Abdulghani	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
AffieriGPS23 AffieriGPS23	A. Affieri [M. Garrappa [E. Pastore [F. Salassa]	Permutation flowshop problems minimizing core processing time and core idle time	Yes	[15]	2023	Computers & Industrial Engineering	13	0	37	1249	1504
Caballer023 [Caballer023]	Jordi Coll Caballero	Scheduling through logic-based tools	Yes	[127]	2023	Constraints An. Int.	1	0	0	1287	1505
CzerniachowskaW23 CzerniachowskaW23	K. Czerniachowska [R. Wiczniarek [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
FahimiQ23 FahimiQ23	H. Fahimi [C. Quimper]	Overload-Checking and Edge-Finding for Robust Cumulative Scheduling	No	[207]	2023	INFORMS Journal on Computing	null	0	16	No	1507
Fatemi-AnarakiTTFV23 Fatemi-AnarakiTTFV23	S. Fatemi-Anaraki [R. Tavakkoli-Moghaddam [M. Founani [B. Vahedi-Nouri]	Hybrid 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. Hamdi]	Operating room scheduling by emphasizing 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. Gür [M. Pinarbaşı [Haci Mehmet Alakas [T. 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 [Seyda Topaloğlu Yıldız [Özge Satır Akpunar	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. Houssin [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. Mrkvicka [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		cyclic, table constraint, cumulative, disjunctive	C++	Ilog Scheduler			benchmark	edge-finding, not-last, energetic reasoning, not-first, time-tabling	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, Gecode, Ilog Solver, Cplex, Ilog Scheduler, OPL, Choco Solver, CPO	railway, container terminal, satellite, robot, pipeline, aircraft, shipping industry	chemical industry, petrochemical industry	real-world, CSPlib, benchmark	edge-finding	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 real-life	time-tabling	984	1514	
LammaMM97 [377]	15	job-shop, resource, scheduling, precedence, order, task, job, distributed, no-wait		circuit, disjunctive	C++, Prolog	ECLAPSe, OPL, CHIP	railway				1230	1760
LetortCB15 [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, scheduling, 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, ECOPSe, CHIP			random real-world	real-world	1178	1708	
LiessM08 [388]	12	precedent, resource, scheduling, machine, job, activity, precedence, job-shop, task, resource, scheduling, machine	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 instance, real-life generated instance, industrial partner, benchmark	not-last, energetic reasoning, not-first, edge-finding	1133	1663	
LombardiM10s [402]	30	due-date, distributed, order, job, make-span, release-date, re-scheduling, task, completion-time, resource, activity, precedence, preempt, scheduling, machine	TCSP	cycle, constraint, span, 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
AaslanPG23	Optimization of Short-Term Underground Mine Planning Using Constraint Programming	CP Opt	real-world	1	n	n	n	-	-	?	1	325
AaslanPG23 [1]	Enhancing Hybrid CP-SAT Search for Disjunctive Scheduling	ARIES	real-world, github, OR-Tools	1	y	y	-	JSSP OSSP	-	-	2	371
Bit-Monnot23	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
EftymiouY23	An Efficient Constraint Programming Approach to Preemptive Job Shop Scheduling	CP Opt	supplementary material, github, benchmark	6	ref	y	PJSSP	endBeforeStart span noOverlap	-	-	4	476
JuvinHHL23	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	Horizontally Elastic Edge Finder Rule for Cumulative Constraint Based on Slack and Density	?	benchmark	5	BL PSPLib	n	-	RCPSPs	-	-	6	480
KimCMILLP23	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-Somarin23	A Constraint Programming Model for a Constrained Job Shop Scheduling Problem with Machine Availability	CP Opt	random instance	0	n	n	-	JSSP RMS	alternative endBeforeStart noOverlap table	-	8	529
MehdiZadeh-Somarin23 [430]	A Constraint Programming Model for Scheduling the Unloading of Trains in Ports	custom	real-world, generated instance	0	n	n	-	SUTP	PP-MS-MMRCPS/maximum disjunctive	-	9	553
PerezGSL23	Partially Preemptive Multi Skill/Mode Resource-Constrained Project Scheduling with Generalized Precedence Relations and Calendars	CP Opt MiniZinc Chuffed	real-world, benchmark, industrial instance, real-life	4	y	y	PP-MS-MMRCPS/maximum	-	-	10	557	
SquillaciPR23	Scheduling Complex Observation Requests for a Constellation of Satellites: Large Neighborhood Search Approaches	Cplex Studio	github, benchmark	2	y	n	-	EOSP	?	-	11	584
TardivoDFMP23	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	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	Dynamic All-Different and Maximal Cliques Constraints for Fixed Job Scheduling	FaClLe	realworld, random instance	0	(y)	n	[628]	FJS	-	-	14	620
WangB23 [629]	A competitive constraint programming approach for the group shop scheduling problem	CP Opt	github, benchmark	0	ref	n	-	GSSP	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-AnarakTFV23] [212], [MehdiZadeh-Somarin23] [430], [GurPAE23] [270], [JuvinHHL23a] [331], [OujanaAYB22] [487], [Lemos21] [381]	
ApplicationAreas	HVAC	[LimHTB16] [399], [LimBTBB15] [391], [GrimesIOS14] [269]	-	[AkramNHRSA23] [13], [BenderWS21] [84], [HamPK21] [275], [Astrand21] [35], [QinWLS21] [511], [AstrandO21] [36], [MejaY20] [431]	
ApplicationAreas	agriculture	-	-	[PrataAN23] [509], [PovedaAA23] [508], [Adelgren2023] [7], [Etmane2023] [510], [NMS22] [20], [Bekerman22] [105], [ZarandiASC20] [554], [HanslerRPA20] [238], abs-1902-09244 [283], [Hoeker9] [312], [LaboreiRSV18] [372], [HoekerH17] [314], [TranAB16] [554], [Lembard10] [398], [Laborei09] [370], [Kowacs08] [355], [KrogLP110] [608], MartinPV01 [427], [SimonsCK00] [660], [GruianK98] [264], Darby-DownmanLM297 [163], [Wallace96] [625], [SimonsS05] [557], [SimonsC05] [561]	
ApplicationAreas	aircraft	[PohlAF20] [602], [WangB20] [628], [TransDFWV19] [605], [Johann16] [205], [BalajestaniB13] [42], [LombardiM19] [405], [BalajestaniB11] [41], [FrankK05] [210], [Artiouchine305] [24], [Simons09] [558]	[WangB23] [629], [GombolayWS18] [253], [Ham18] [273], [Simons07] [559], [SakkoutW09] [529], [Simons95a] [556]	[GaoZ23] [269], [YuraszeczkMPV22] [650], [EndrZD22] [169], [Creditor21] [261], [LimtanayakulS17] [232], [SunLYL16] [562], [Lombardi10] [308], [BarlattCG08] [52], [SchildW00] [532]	[GaoZ23] [269], [YuraszeczkMPV22] [650], [EndrZD22] [169], [Creditor21] [261], [NaderiB22] [557], [NaderiB22z] [223], [AntorHHE22] [221], [HubnerGSV21] [318], [AbreuAPNM21] [168], [KoecherBFPHSS21] [343], [VlkH121] [623], [BarzegaranZP20] [61], [GelbingerMM19] [236], abs-1911-04768 [235], [BonfettiZLM16] [131], [Sialai5a] [552], SchneiH15] [533], [AlesioNBG14] [181], [HarjunkoskiMBC14] [279], BeniniBG06 [88], [KovacsV06] [360], [Wallace96] [625]
ApplicationAreas	automotive	-	-	[PovarA22] [606], [NaderiRBC23] [160], [OzencB22] [606], [NaderiB22] [557], [NaderiB22z] [223], [AntorHHE22] [221], [HubnerGSV21] [318], [AbreuAPNM21] [168], [KoecherBFPHSS21] [343], [VlkH121] [623], [BarzegaranZP20] [61], [GelbingerMM19] [236], abs-1911-04768 [235], [BonfettiZLM16] [131], [Sialai5a] [552], SchneiH15] [533], [AlesioNBG14] [181], [HarjunkoskiMBC14] [279], BeniniBG06 [88], [KovacsV06] [360], [Wallace96] [625]	
ApplicationAreas	cable tree	[KochlerBFFHPSS21] [348]	-	[BeldiceanuC04] [78], abs-2312-13682 [497], [PerrezGSL23] [499], [TouatBT22] [502], [CauwelaertDS20] [142], [Wallace96] [627], [ZarandiASC20] [554], FallahAC20] [269], [Hoeker19] [312], [CauwelaertDMS20] [140], Dejemeppe16] [172], [DejemeppeCS15] [172], [Novash12] [476], CorreiaR07] [158], [LimRX06] [389]	
ApplicationAreas	car manufacturing	[QinDCS20] [512], [SacramentoSP20] [526]	[AntuoriHHE21] [222], [LaborieRSV18] [312]	[NaderiRBC23] [460], [WangB23] [629], [Adelgren2023] [7], Etmane2023] [510], [NMS22] [20], [Bekerman22] [105], NaderiB22] [557], [NaderiB22z] [223], [AntorHHE22] [221], HubnerGSV21] [318], Lemee21] [331], [MohitazardehTNF20] [413], [TangIWSK18] [574], [HoekerH17] [314], [DoulabiRP16] [190], [LipovetzkyvPS14] [394], HachemGI11] [272], [MilanoW09] [441], [WaB369] [643], MilanoW06] [440], [BeldiceanuC02] [79], [JainG01] [323], SimonsK00] [560]	
ApplicationAreas	container terminal	-	-	[Bartak02] [54], [Bartak02a] [53], Grolier21] [261], ZahnH20] [652], [GalleguilloKSB19] [225], Mati-WalaaOBM17] [418], [Letort13] [382], IfrimOS12] [320], LetortBC12] [383]	
ApplicationAreas	crew-scheduling	[ZarandiASC20] [654], [PourDERB18] [505]	[BourreauGGLT22] [118], [Zahout21] [652], GombolayWS18] [253], [Mason01] [429], Touraine06] [593]	[HurleyOS16] [319]	
ApplicationAreas	dairies	-	-	[HebrardALLCMR22] [285], GuoZ23 [269], JuvinHHL23a] [331], [Adelgren2023] [7], ShaikhK23 [547], EndoDZ22] [199], [Astrand21] [35], [AstrandO21] [36], [AntuoriHHE21] [222], [ZarandiASC20] [554], Ham18a] [274]	
ApplicationAreas	dairy	[EscobetPQRA19] [201]	[PrataAN23] [509], [HarjunkoskiMBC14] [279]	-	
ApplicationAreas	datacenter	[HermenierDL11] [500]	-	-	
ApplicationAreas	datacentre	-	-	-	
ApplicationAreas	day-ahead market	-	-	-	
ApplicationAreas	deep space	[MontemanniD23a] [446], [MontemanniD23] [447], Ham18] [273]	-	-	

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], RoshanaiBAUB20 [521], TranPZLDB18 [597], TranVNB17 [599], TranVNB17a [600], CohenH17 [154], BoothNB16 [113], KuiB16 [365], TranAB16 [594], TranWDRFOV16 [601], LuoVLM16 [415], TranDRFWOB16 [596], BajestaniB15 [43], KoschB14 [839], TerekhovTDB14 [831], LouieVN14 [412], HeinzB13 [294], HeinzKB13 [291], BajestaniB13 [42], TranTDB13 [598], HeinzB12 [290], TerekhovDOB12 [580], Zarandib12 [595], KovacsB11 [356], BeckFW11 [66], HeckmanB11 [289], BajestaniB11 [41], WuLB09 [643], BidotVLB09 [94], CarchraeB09 [131], WatsonB08 [632], KovacsB08 [553], BeckW07 [73], Beck07 [64], KovacsB07 [354], Beck06 [63], CarchraeBF06 [132], WuBBo5 [642], BeckW05 [72], BeckW04 [71], Beckf03 [70], BeckPS03 [69], BeckF00 [68], Beck99 [62], BeckF98 [67].
Michela Milano	31	297	
Andreas Schutt	27	322	YangS19 [141], KreterSS18 [363], Cirechi18 [253], MuslimS18 [455], KreterS17 [363], YoungS17 [250], SchuttS16 [543], SchutTS16 [543], SchutTS13a [536], GuoS13 [265], SchuttSW13 [541], ChuGNSW13 [147], SchuttCSW12 [535], SchutFSW11 [540], SchutTS11 [534], SchutW10 [541], abs-1009-0347 [539], SchutTSW09 [538], SchutTSW05 [535].
Michele Lombardi	25	194	BorghesiBLMB18 [115], CamerloherLMB18 [111], BridiLMB16 [120], BridiLBBM16 [121], Lombardib1M15 [399], BartoliniBBLM14 [60], BonfiettiLM14 [111], BonfiettiLBM14 [109], BonfiettiLM13 [110], Lombardib1M13 [406], Lombardib1M13 [407], Lombardib1M12 [405], Lombardib1M12a [404], BonfiettiM12 [112], BonfiettiLM11 [107], Lombardib1M11 [400], BeniniLMR11 [60], Milano11 [438], Lombardib1M10 [403], Lombardib1M10a [402], Lombardib1M10b [408], Lombardib1M10c [408], Lombardib1M10d [401], RuggieroBMA09 [525], MilanoW09 [441], BeniniLMR08 [89], BeniniLMR08 [89], BeniniBGM06 [88], MilanoW06 [110], MilanoORT02 [439], LaminaMM97 [377], BrusonCLMM96 [121].
Peter J. Stuckey	24	453	YangS19 [644], DenirovicsS18 [177], KreterSS18 [364], MuslimS18 [455], KreterS17 [363], SchuttS16 [543], BlomPS16 [100], KreterS15 [362], BlumPS15 [124], SchutTSW11 [542], BlomPS14 [464], LipovetzkyBPS14 [394], GuSSW14 [266], SchutTS13a [536], GuSS13 [265], SchutTSW13 [541], SchutTSW12 [536], GuSW12 [267], SchutTSW11 [540], BandaSC11 [170], abs-1009-0347 [539], SchutTSW09 [538], OhrnemannSC09 [483].
John N. Hooker	19	1316	ElicOH22 [195], HookerI17 [312], Hooker17 [311], Hooker17 [314], HochenigH16 [288], CireCH16 [150], HarjunkoskiMBC14 [270], CireCH13 [149], CobanH11 [153], CobanH11 [152], Hooker10 [310], Hooker07 [309], Hooker06 [308], Hooker05 [306], Hooker04 [305], Hooker03 [313], HookerY02 [315], Hooker02 [304].
Emmanuel Hebrard	17	71	JuvinHH12a [328], HebrardALLCMR22 [285], AntuoriHHEN21 [22], ArtiguesHQ121 [32], GodetLHS20 [247], AntuoriHHEN20 [21], Hebrard-HJMPV16 [286], SimoninAHL15 [555], SinalAH15 [563], GrimesH15 [581], BessiereHMQW14 [63], SimoninAHL12 [554], BilautHL12 [65].
Pierre Lopez	17	90	JuvinHH12a [328], JuvinHH12a [331], JuvinHH12a [330], HebrardALLCMR22 [285], JuvinHL22 [229], Polo-MejiaALB20 [503], NattaHKAL19 [466], NattaAL17 [463], NattaALR16 [464], SimoninAHL15 [555], NattaAL15 [462], SimoninAHL12 [564], BillautHL12 [65], LahimerHL11 [376], TrojetHL11 [662], LopezAKY00 [410], TorresL00 [591].
Christian Artigues	16	203	PovedaAA23 [606], PohlAK22 [602], HebrardALLCMR22 [285], ArtiguesHQ121 [32], Polo-MejiaALB20 [503], NattaHKAL19 [466], NattaAL17 [463], NattaALR16 [464], SimoninAHL15 [555], NattaAL15 [462], SinalAH15 [553], SimoninAHL12 [554], NeronABCDD06 [481].
Pierre Schaus	15	79	CauwelaertDS20 [122], UllmannKS20 [656], HoumtJSW19 [316], CappartTSR18 [130], CauwelaertLS18 [141], CappartS17 [129], CauwelaertDMS16 [120], DujougenotCS15 [173], SchauTS18 [530].
Helmut Simonis	15	154	ArmstrongCOS22 [271], ArmstrongGOS21 [26], AntunesABD20 [20], AntunesABD19 [19], HurleyOS16 [310], GrimesIOS14 [260], IfrimOS12 [320], SimonisH11 [662], SimonisH10 [559], SimonisK09 [560], Simonis99 [558], Simonis95 [561], Simonis95 [557], Simonis95a [556], DinebasSH90 [184].
Nicolas Beldiceanu	13	274	Madz-WamilaLOB17 [418], Madz-WamilaHB [617], LetortCB15 [385], LetortCB13 [384], LetortCB12 [383], ClericoPB11 [151], BeldeceanuCDP11 [80], BeldeceanuCP08 [81], PoderB08 [500], BeldeceanuCP07 [82], PoderBS04 [501], BeldeceanuCP02 [79], AggounB93 [9].
Luca Benini	13	146	BorghesiBLMB18 [115], BridiBLMB16 [120], BridiBLMB16 [121], BonfiettiBLM14 [109], Lombardib1M13 [407], BonfiettiBLM12 [108], BonfiettiBLM11 [107], Lombardib1M11 [406], BeniniLMR11 [60], Lombardib1M10 [408], RuggieroBMA09 [525], BeniniLMR08 [89], BeniniBGM06 [88].
Philippe Laborie	12	513	LunardiBLRV20 [413], LaborieTSV18 [372], Laborie18a [371], MelgarejoS15 [11], VilimS15 [621], Laborie09 [370], BidotVLS09 [94], BaptisteLPN06 [17], NeronABCDD06 [481], GodardLN05 [245], Laborie03 [369], FocaceLN06 [215].
Philippe Baptiste	11	403	BaptisteB18 [46], Baptiste09 [45], BaptisteLPN06 [47], NeronABCDD06 [481], ArtiouchnicheB05 [34], Baptiste02 [44], BaptistePN01 [50], BaptisteLP00 [49], PapazB98 [492], BaptisteP97 [48], PapeB97 [49].
Roman Barták	11	88	SvancaraB22 [569], JelmekB16 [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

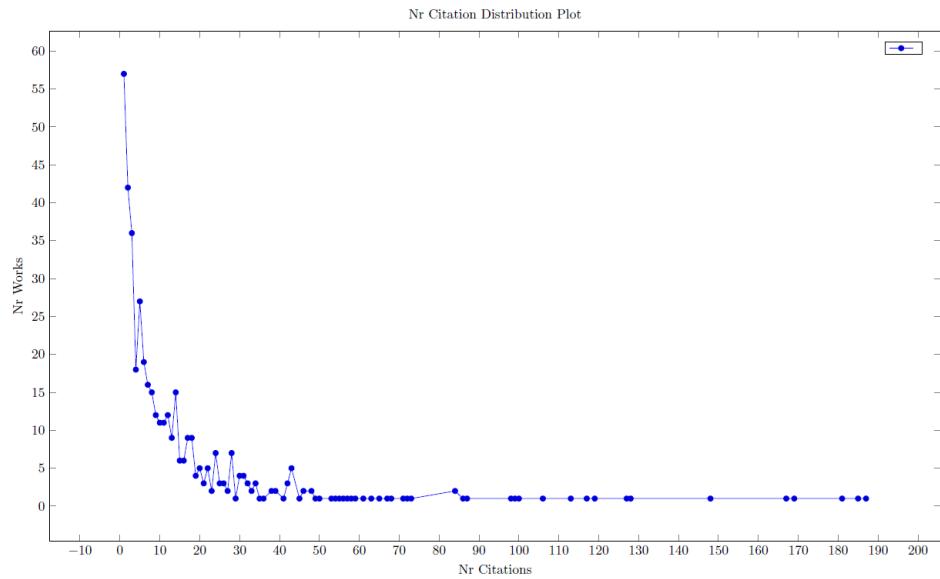
Table 9: Works from bibtex (Total 30)

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 Computers Chemical Engineering	45	490	150	1352	1753
HarjunkoskiMBC14	I. Harjunkoski, Christos T. Maravillas, P. Bongers, Pedro M. Castro, S. Engell, Ignacio E. Grossmann, John N. Hooker, C. Méndez, G. Sand, L. Wassick	Scope for industrial applications of production scheduling models and solution methods	Yes	[279]	2014	European Journal of Operational Research 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 Mathematical Programming Book	33	344	127	1278	1762
HookerO03 HookerO03	John N. Hooker, G. Ottosson	Logic-based Benders decomposition	Yes	[319]	2003	Mathematical Programming Book	28	317	0	1347	1729
BaptistePN01	P. Baptiste, Claude Le Pape, W. Nuijten	Constraint-Based Scheduling	No	[50]	2001	INFORMS Journal on Computing Mathematical and Computer Modelling Book	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	[233]	2001	INFORMS Journal on Computing Mathematical and Computer Modelling Book	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	INFORMS Journal on Computing Mathematical and Computer Modelling Book	17	187	11	1247	1767
Hooker00	John N. Hooker	Logic-Based Methods for Optimization: Combining Optimization and Constraint Satisfaction	No	[304]	2000	Operations Research Planning and Scheduling by Logic-Based Benders Decomposition	null	185	0	No	n/a
Hooker07	John N. Hooker	Decomposition techniques for multistage scheduling problems using mixed-integer and constraint programming methods	Yes	[309]	2007	Operations Research Computers Chemical Engineering	29	181	19	1345	1715
HarjunkoskiG02	I. Harjunkoski, Ignacio E. Grossmann	Introducing Global Constraints in CHIP	Yes	[278]	2002	INFORMS Journal on Computing Mathematical and Computer Modelling Book	20	169	11	1334	1733
BeldiceanuC94	N. Beldiceanu, E. Contejean	IBM ILOG CP optimizer for scheduling - 20+ years of scheduling with constraints at IBM/ILOG	Yes	[78]	1994	INFORMS Journal on Computing Mathematical and Computer Modelling Book	27	167	8	1271	1765
LaborieRSV18	P. Laborie, J. Rogerie, P. Shaw, P. Vilim	Algorithms for propagating resource constraints in AI planning and scheduling: Existing approaches and new results	Yes	[372]	2018	INFORMS Journal on Computing Mathematical and Computer Modelling Book	41	148	35	1370	1610
Laborie03 Laborie03	P. Laborie	Propagation via lazy clause generation	Yes	[369]	2003	INFORMS Journal on Computing Mathematical and Computer Modelling Book	38	128	10	1369	1731
OhrimenkoSC09	O. Ohrimenko, Peter J. Stuckey, M. Codish	Mixed Integer Programming models for job shop scheduling: A computational analysis	Yes	[483]	2009	INFORMS Journal on Computing Mathematical and Computer Modelling Book	35	127	15	1417	1702
Kuhi16 Kuhi16	W. Ku, J. Christopher Beck	A constraint programming model for real-time train scheduling at junctions	Yes	[365]	2016	INFORMS Journal on Computing Mathematical and Computer Modelling Book	9	119	17	1367	1630
Rodriguez07 Rodriguez07	J. Rodriguez	Scheduling projects with multi-skilled personnel by a hybrid MILP/CP-benders decomposition algorithm	Yes	[520]	2007	INFORMS Journal on Computing Mathematical and Computer Modelling Book	15	117	6	1430	1716
LiW08 LiW08	H. Li, K. Womer	Scheduling and routing of automated guided vehicles: A hybrid approach	Yes	[386]	2008	INFORMS Journal on Computing Mathematical and Computer Modelling Book	18	113	31	1374	1708
CorreiaLR07	Ayoub Inna Correia, A. Langevin, L. Rousseau	Mixed-Integer linear programming and constraint programming formulations for solving distributed flexible job shop scheduling problem	Yes	[158]	2007	INFORMS Journal on Computing Mathematical and Computer Modelling Book	20	106	20	1296	1714
MengZRZL20	L. Meng, C. Zhang, Y. Ren, B. Zhang, C. Lv	Earth Observation Satellite Management	Yes	[355]	2020	INFORMS Journal on Computing Mathematical and Computer Modelling Book	13	100	62	1393	1574
BensanaLV99	E. Bensana, M. Lemaitre, G. Verfaillie	Propagating constraints via lazy clause generation	Yes	[91]	1999	INFORMS Journal on Computing Mathematical and Computer Modelling Book	7	99	0	1276	1752

OpenCitation Count Compared to Google Scholar

Key	Type	Google	OC	Ratio
JainM99	article	1116	490	2.28
HarjunkoskiMBC14	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