

Elaboração de mini surveys

Seminários da EIC

Eduardo Ogasawara
<http://eic.cefet-rj.br/~eogasawara>

Por que devo fazer uma boa revisão bibliográfica?



WWW.PHDCOMICS.COM

Como uma boa revisão pode ajudar?

- **Motivação**
 - Por que esta pesquisa é importante?
- **Definição do problema**
 - Qual é o problema que queremos atacar?
- **Solução**
 - Sua abordagem é boa, pois resolve tal determinado problema
- **Quais são os trabalhos semelhantes?**

Vantagens?

- Boa seção de trabalho relacionados
- Construção do referencial teórico
- Elaborar um mini-survey

Taxonomia

Regarding the available literature on flight delay prediction, we have conducted a systematic mapping study. The search expression string (“airport delay” ∨ “flight delay”) ∧ (“predict” ∨ “forecast” ∨ “propagate”) was used to query Scopus on October 2017. Query result brought 310 references. Additionally, 29 works were added using snowballing search.

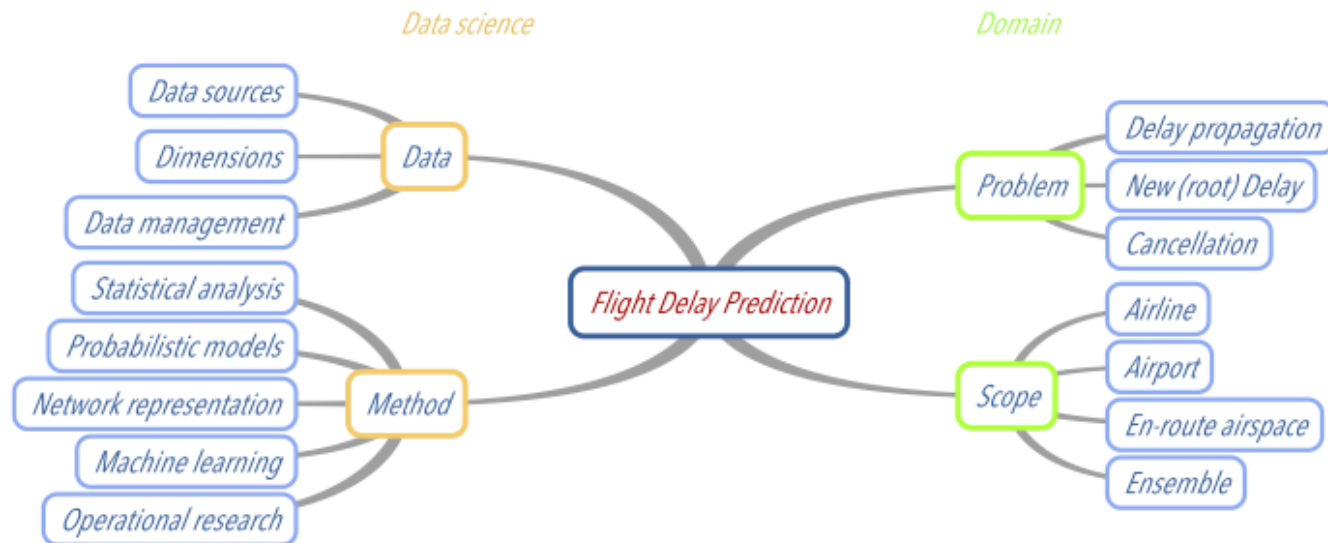
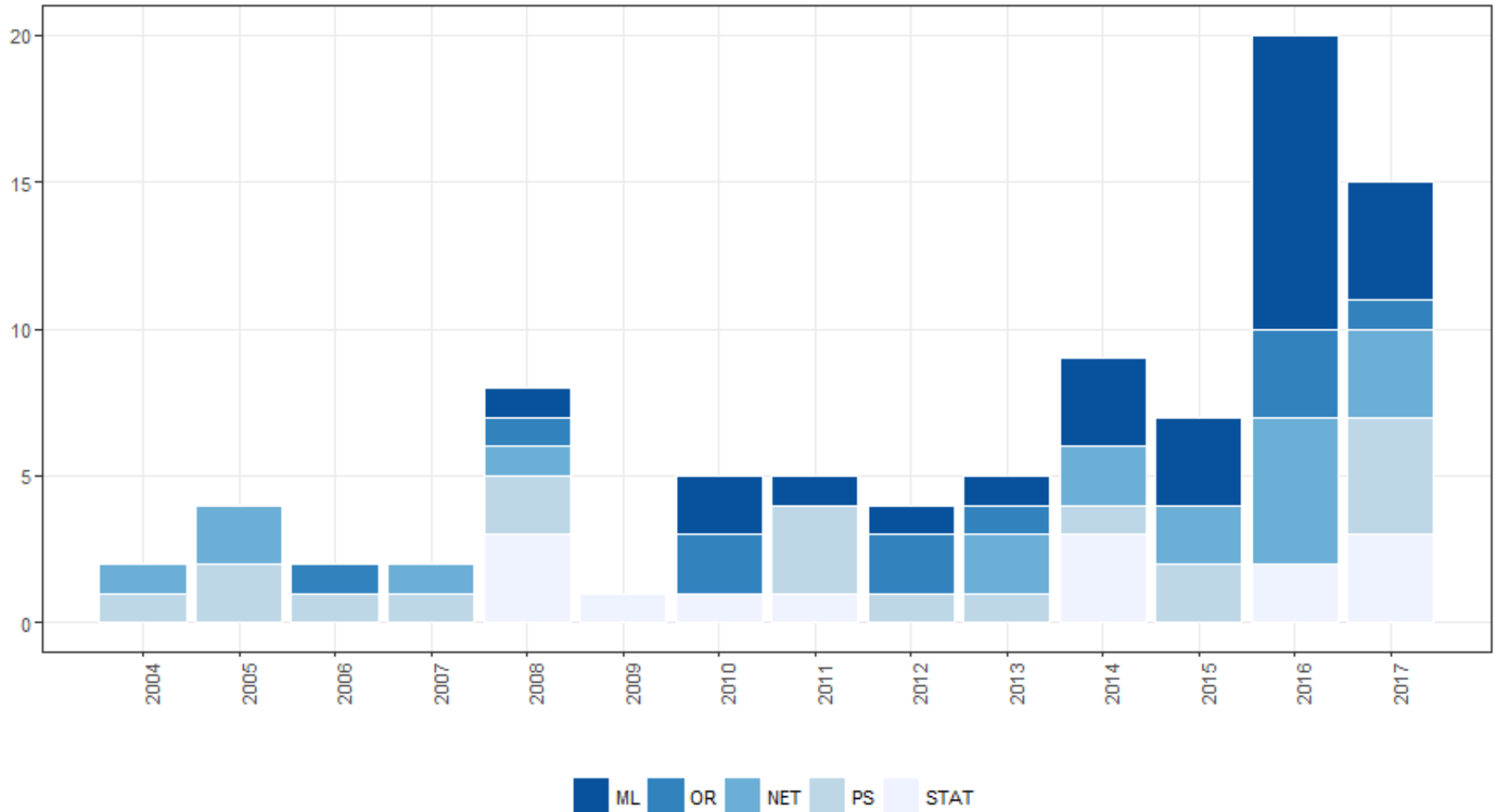


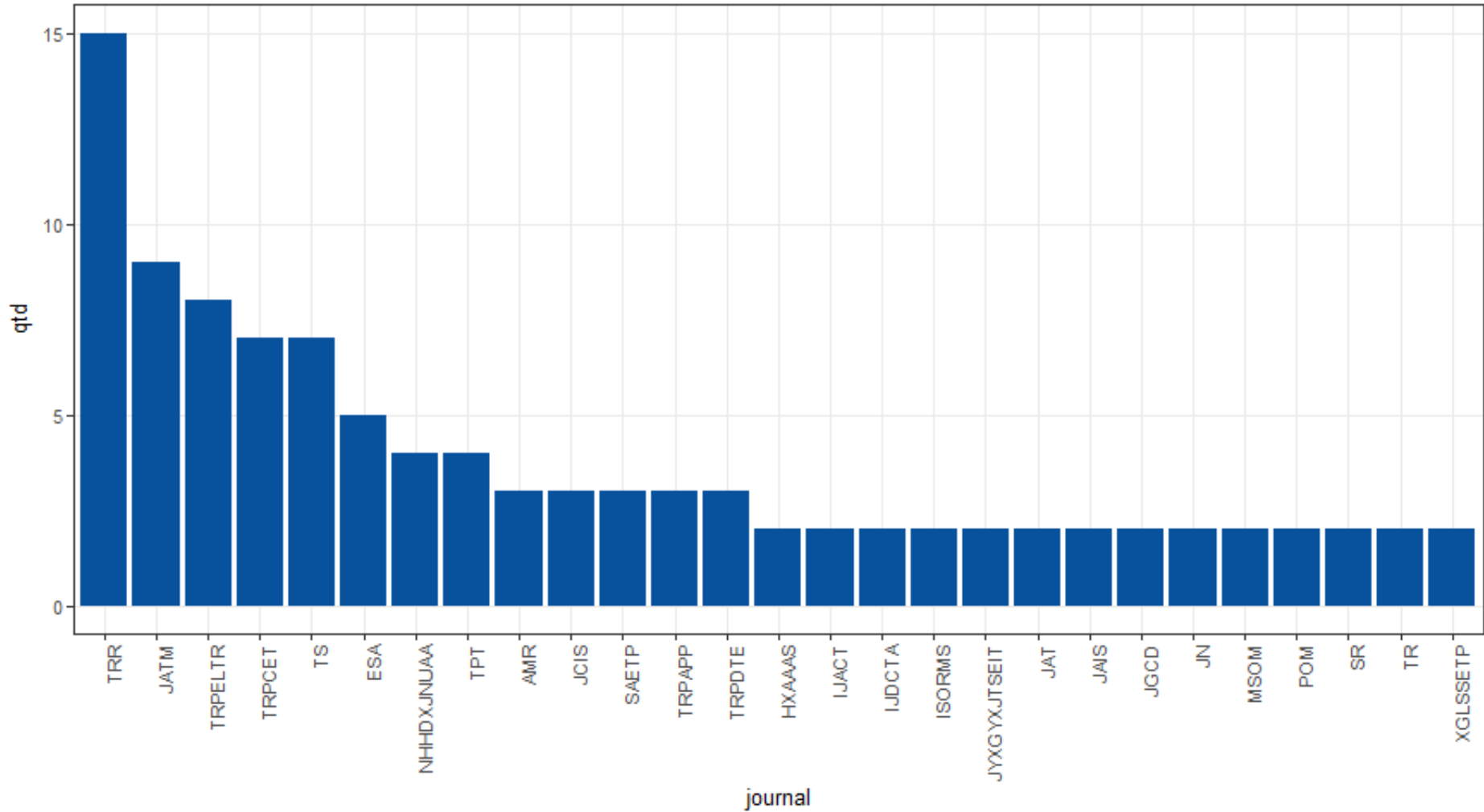
Figure 2. Taxonomy of the flight delay prediction problem

We have selected 134 to build this review due to their relevance and direct link with the flight delay prediction problem. The main criteria to be included is to have the word “delay” in the abstract, and the paper should have at least the one citation at Google Scholar per year before 2016. It means that to include a paper of 2015, it must have at least one citation, and so one.

Evolução da produção por método



Principais fóruns



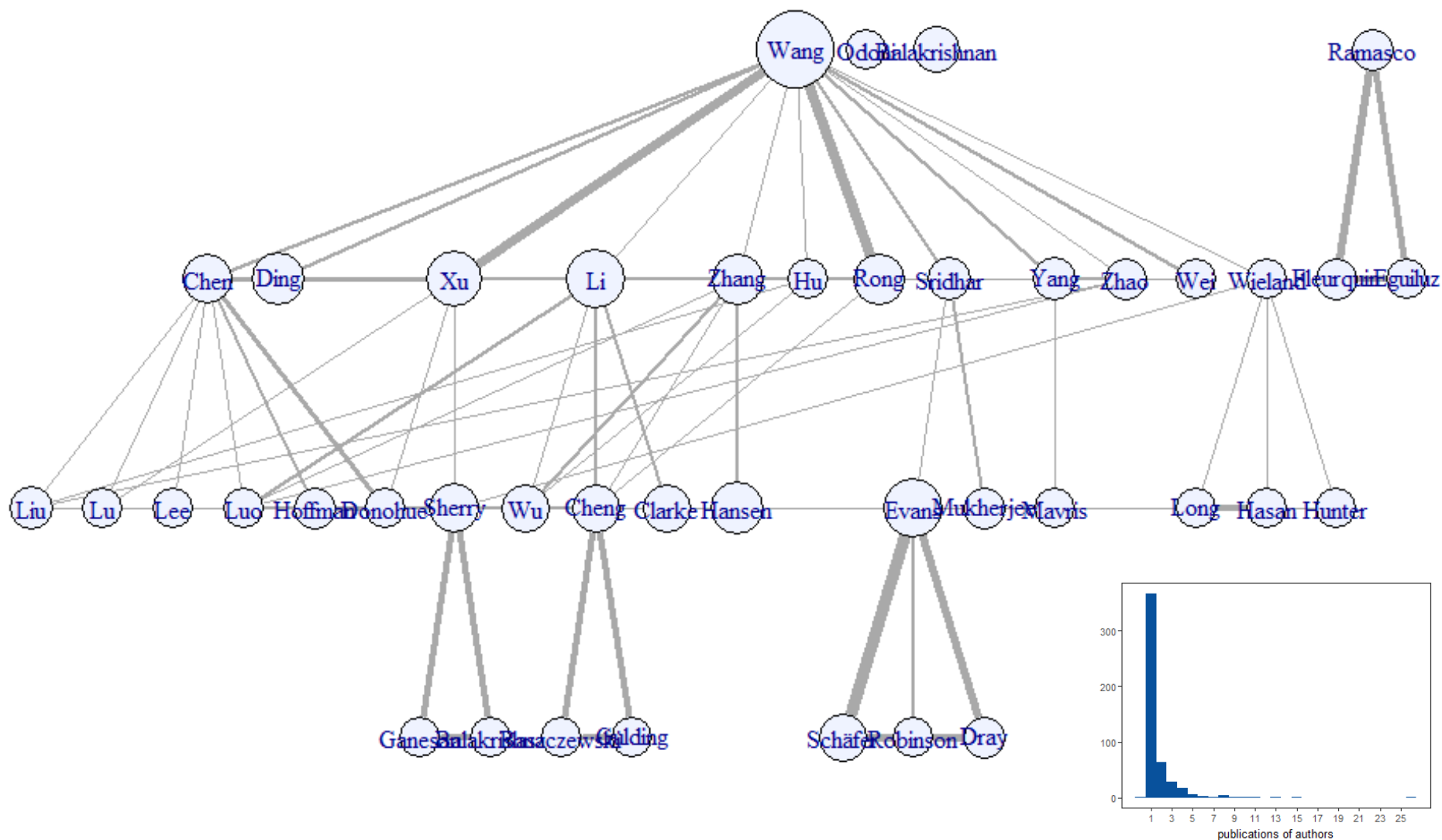
Colorir por método

Timeline

Years	root delay or cancellation	delay propagation
1997-2000	■ Wieland ⁽¹¹⁷⁾ ■ Boswell ⁽²⁴⁾	■ Beatty ⁽¹⁶⁾
2001-2004	■ Hansen ⁽⁵⁹⁾ ■ Mueller ⁽⁹⁰⁾ ■ Evans ⁽⁵¹⁾	■ Schaefer ⁽¹⁰⁶⁾ ■ Abdelghany ⁽²⁾
2005	■ Hsiao ⁽⁶²⁾ ■ Hansen ⁽⁶⁰⁾	■ Wu ⁽¹¹⁹⁾ ■ Xu ⁽¹²³⁾
2006	■ Sim ⁽¹⁰⁷⁾	■ Lan ⁽⁷⁸⁾
2007	■ Wan ⁽¹¹⁴⁾ ■ Biesiada ⁽²²⁾ ■ Abdel-Aty ⁽¹⁾	
2008	■ Balakrishna ⁽⁹⁾ ■ Soomer ⁽¹⁰⁹⁾	■ Lapp ⁽⁷⁹⁾ ■ AhmadBeygi ⁽³⁾
	■ McCrea ⁽⁸⁵⁾ ■ Tu ⁽¹¹²⁾ ■ Pathomsiri ⁽⁹⁴⁾	
2009	■ Pejovic ⁽⁹⁶⁾	
2010	■ Balakrishna ⁽¹⁰⁾ ■ Ganesan ⁽⁵⁶⁾ ■ Klein ⁽⁷³⁾	■ Ahmadbeygi ⁽⁴⁾
2011	■ Gürbüz ⁽⁵⁸⁾ ■ Evans ⁽⁴⁷⁾	■ Nayak ⁽⁹¹⁾
2012	■ Wang ⁽¹¹⁶⁾ ■ Zou ⁽¹³²⁾ ■ Azadian ⁽⁷⁾	■ Dück ⁽⁴⁴⁾ ■ Wong ⁽¹¹⁸⁾
	■ Kulkarni ⁽⁷⁶⁾ ■ Kim ⁽⁷²⁾ ■ Evans ⁽⁴⁸⁾	
2013	■ Xiong ⁽¹²²⁾	■ Pyrgiotis ⁽⁹⁹⁾ ■ Fleurquin ⁽⁵⁵⁾
2014	■ Rebollo ⁽¹⁰²⁾ ■ Lin ⁽⁸²⁾ ■ Baumgarten ⁽¹⁵⁾	■ Campanelli ⁽²⁹⁾ ■ Hao ⁽⁶¹⁾
2015	■ Bloem ⁽²³⁾ ■ Cai ⁽²⁸⁾ ■ Jacquillat ⁽⁶⁵⁾	■ Ciruelos ⁽³⁵⁾ ■ Cheng ⁽³²⁾
2016	■ Choi ⁽³⁴⁾ ■ Castaing ⁽³¹⁾ ■ Bertsimas ⁽²⁰⁾	■ Khanmohammadi ⁽⁷⁰⁾ ■ Cong ⁽³⁶⁾
	■ Simaiakis ⁽¹⁰⁸⁾	
	■ Takeichi ⁽¹¹¹⁾ ■ Ding ⁽⁴²⁾ ■ Baluch ⁽¹³⁾	
2017	■ Jayam ⁽⁶⁷⁾ ■ Jacquillat ⁽⁶⁶⁾	■ Belkoura ⁽¹⁸⁾ ■ Ben Ahmed ⁽¹⁹⁾
	■ Pérez-Rodríguez ⁽¹⁰⁰⁾	

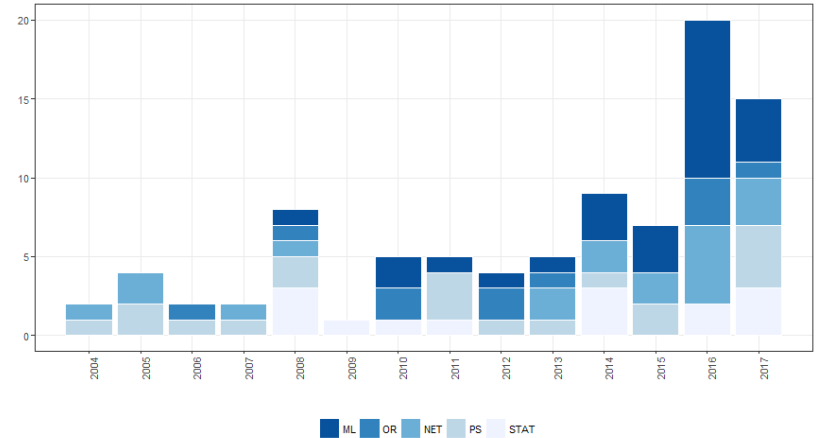
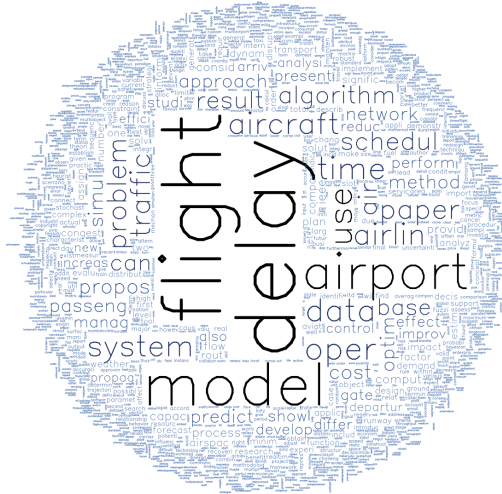
Figure 6. Time line of flight delay prediction publications: ■ Statistical Analysis, ■ Probabilistic Models, ■ Network Representation, ■ Operational Research, ■ Machine Learning

Principais autores



Rede de colaboração (mais de 3 publicações)

■ Outras visualizações/análises pragmáticas de valor



Years	root delay or cancellation	delay propagation
1997-2000	Wieland ⁽¹¹⁷⁾ Boswell ⁽²⁴⁾	Beatty ⁽¹⁶⁾
2001-2004	Hansen ⁽⁵⁹⁾ Mueller ⁽⁹⁰⁾ Evans ⁽⁵¹⁾	Schaefer ⁽¹⁰⁶⁾ Abdelghany ⁽²⁾
2005	Hsiao ⁽⁶²⁾ Hansen ⁽⁶⁰⁾	Wu ⁽¹¹⁹⁾ Xu ⁽¹²³⁾
2006	Sim ⁽¹⁰⁷⁾	Lan ⁽⁷⁸⁾
2007	Wan ⁽¹¹⁴⁾ Biesiada ⁽²²⁾ Abdel-Aty ⁽¹⁾	Lapp ⁽⁷⁹⁾ AhmadBeygi ⁽³⁾
2008	Balakrishna ⁽⁹⁾ Soomer ⁽¹⁰⁹⁾	
2009	McCrea ⁽⁸⁵⁾ Tu ⁽¹¹²⁾ Pathomsiri ⁽⁹⁴⁾	
2010	Balakrishna ⁽¹⁰⁾ Ganesan ⁽⁵⁶⁾ Klein ⁽⁷³⁾	Ahmadbeygi ⁽⁴⁾
2011	Gürbüz ⁽⁵⁸⁾ Evans ⁽⁴⁷⁾	Nayak ⁽⁹¹⁾
2012	Wang ⁽¹¹⁶⁾ Zou ⁽¹³²⁾ Azadian ⁽⁷⁾	Dück ⁽⁴⁴⁾ Wong ⁽¹¹⁸⁾
2013	Kulkarni ⁽⁷⁶⁾ Kim ⁽⁷²⁾ Evans ⁽⁴⁸⁾	Pyrgiotis ⁽⁹⁹⁾ Fleurquin ⁽⁵⁵⁾
2014	Rebollo ⁽¹⁰²⁾ Lin ⁽⁸²⁾ Baumgarten ⁽¹⁵⁾	Campanelli ⁽²⁹⁾ Hao ⁽⁶¹⁾
2015	Bloem ⁽²³⁾ Cai ⁽²⁸⁾ Jacquillat ⁽⁶⁵⁾	Ciruelos ⁽⁵³⁾ Cheng ⁽³²⁾
2016	Choj ⁽³⁴⁾ Castaña ⁽³¹⁾ Bertsimas ⁽²⁰⁾	Khanmohammadi ⁽⁷⁰⁾ Cong ⁽⁵⁶⁾
	Simaiakis ⁽¹⁰⁸⁾	
2017	Takeichi ⁽¹¹¹⁾ Ding ⁽⁴²⁾ Baluch ⁽¹³⁾	Belkoura ⁽¹⁸⁾ Ben Ahmed ⁽¹⁹⁾
	Jayam ⁽⁶⁷⁾ Jacquillat ⁽⁶⁶⁾	
	Pérez-Rodríguez ⁽¹⁰⁰⁾	

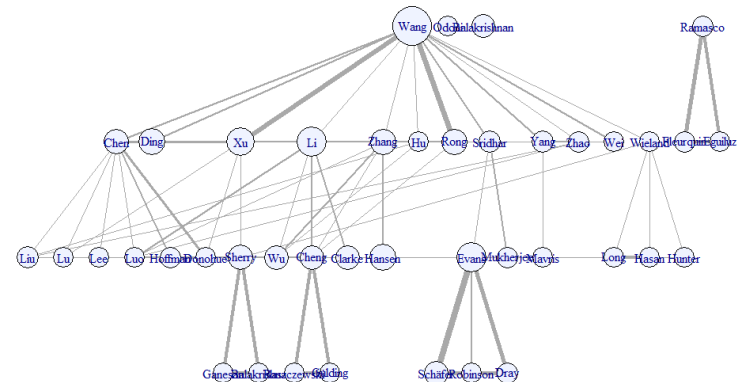


Figure 6. Time line of flight delay prediction publications: STAT Statistical Analysis, PS Probabilistic Models, NET Network Representation, OR Operational Research, ML Machine Learning

Como fazer a revisão bibliográfica? Como fazer o mapeamento sistemático?

- Suponha pesquisa sobre atrasos aéreos
 - O primeiro passo é montar uma string de busca:
 - flight delay
 - Execute a consulta no Scopus

Não filtre as datas

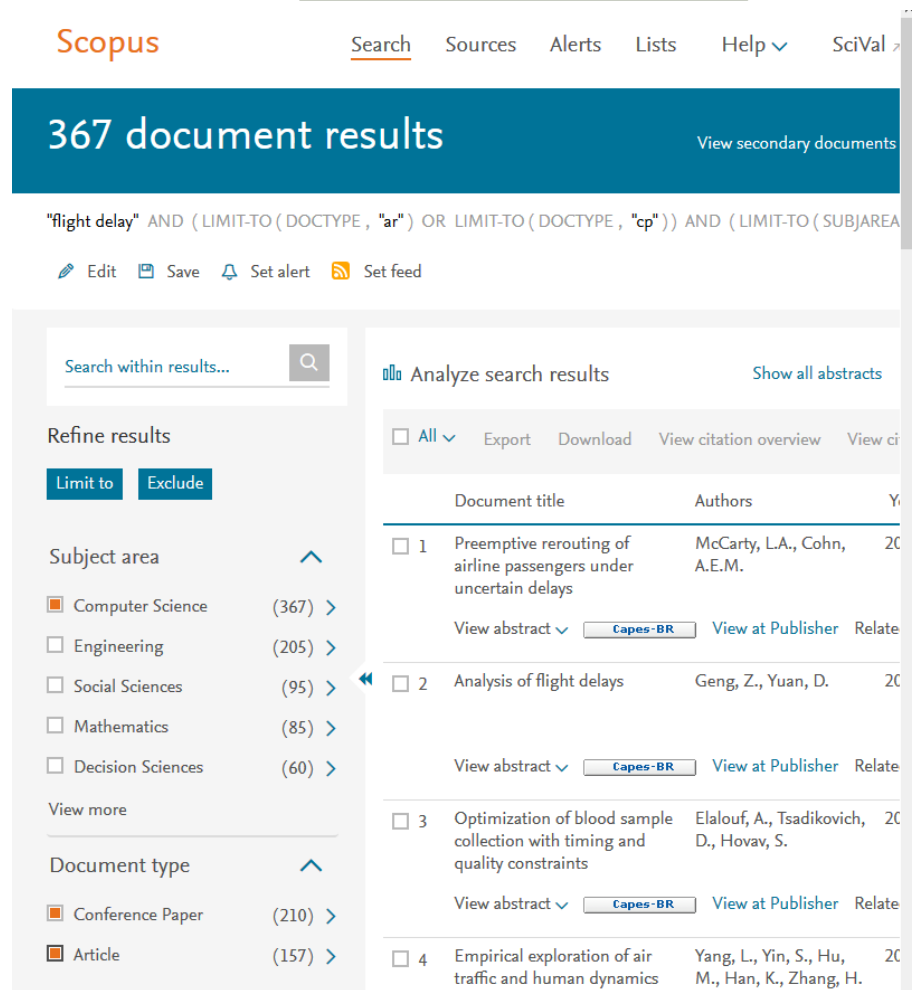
The screenshot shows the Scopus search interface. At the top, the Scopus logo is on the left, and navigation links for Search, Sources, Alerts, Lists, Help, and SciVal are on the right. A blue banner displays '26,945 document results' with a link to 'View secondary documents'. Below the banner, the search query 'flight AND delay' is shown, along with options to Edit, Save, Set alert, and Set feed. A search bar within the results area contains 'Search within results...'. On the left, a 'Refine results' sidebar shows a 'Year' filter with options for 2018 (39), 2017 (2,152), 2016 (2,498), 2015 (2,333), and 2014 (2,235), plus a 'View more' link. On the right, the 'Analyze search results' section includes options for 'All', 'Export', 'Download', 'View citation overview', and 'View ci'. Below this is a table of results with columns for 'Document title' and 'Authors'. Two results are visible: 1. 'Controller design for time-delay system with stochastic disturbance and actuator saturation via a new criterion' by Qi, W., Kao, Y., Gao, Wei, Y.; and 2. '32 x 32 CMOS SPAD Imager for Gated Imaging, Photon Timing, and Photon Coincidence' by Portaluppi, D., Conc E., Villa, F. Each result has options for 'View abstract', 'Capes-BR', 'View at Publisher', and 'Relate'.

Refinando a string de busca

Melhorar a consulta

- O resultado foi muito amplo e precisa ser refinado
 - “flight delay”: 1236 artigos
 - Ainda é muito
- Refinando mais
 - “flight delay” and “predict”: 78 artigos
 - Incompleto
- Aumentando o escopo
 - "flight delay" AND ("predict" OR "forecast"): 268

Alternativa: Filtrar os alvos



Scopus Search Sources Alerts Lists Help SciVal

367 document results [View secondary documents](#)

"flight delay" AND (LIMIT-TO(DOCTYPE, "ar") OR LIMIT-TO(DOCTYPE, "cp")) AND (LIMIT-TO(SUBAREA...

Edit Save Set alert Set feed

Search within results...

Analyze search results [Show all abstracts](#)

All Export Download View citation overview View ci

	Document title	Authors	Y
<input type="checkbox"/>	1 Preemptive rerouting of airline passengers under uncertain delays	McCarty, L.A., Cohn, A.E.M.	20
	View abstract	Capes-BR View at Publisher Relate	
<input type="checkbox"/>	2 Analysis of flight delays	Geng, Z., Yuan, D.	20
	View abstract	Capes-BR View at Publisher Relate	
<input type="checkbox"/>	3 Optimization of blood sample collection with timing and quality constraints	Elalouf, A., Tsadikovich, D., Hovav, S.	20
	View abstract	Capes-BR View at Publisher Relate	
<input type="checkbox"/>	4 Empirical exploration of air traffic and human dynamics	Yang, L., Yin, S., Hu, M., Han, K., Zhang, H.	20

Trabalhos relacionados: 50 a 100 artigos
Mini-survey: 100 a 300 artigos

Exportar as citações

Export document settings ⓘ

You have chosen to export 367 documents

Select your method of export

MENDELEY RefWorks RIS Format (EndNote, Reference Manager) CSV (Excel) BibTeX Text (ASCII in HTML)

What information do you want to export?

Customize export

Citation information

- Author(s)
- Document title
- Year
- Source title
- Volume, Issue, Pages
- Citation count
- Source and Document Type
- DOI

Bibliographical information

- Affiliations
- Serial identifiers (e.g. ISSN)
- PubMed ID
- Publisher
- Editor(s)
- Language of Original Document
- Correspondence Address
- Abbreviated Source Title

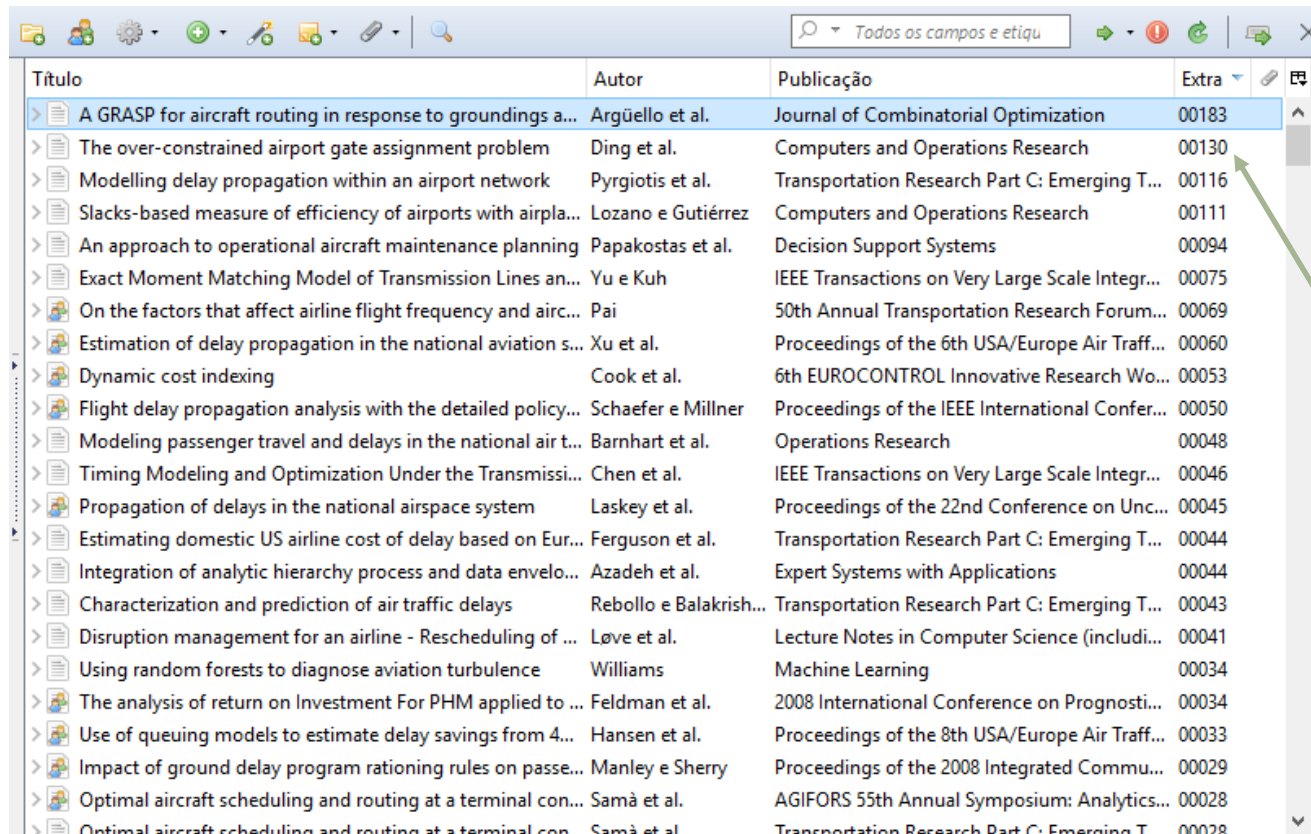
Abstract and Keywords

- Abstract
- Author Keywords
- Index Keywords

Exportar scopus.bib

Importar no Zotero

Importar no Zotero e usar a ferramenta Zotero Scholar Citations



The screenshot shows a Zotero library table with the following columns: Título, Autor, Publicação, and Extra. The 'Extra' column contains citation numbers. A callout box points to the 'Extra' column with the text: 'O campo Extra tem as citações'.

Título	Autor	Publicação	Extra
A GRASP for aircraft routing in response to groundings a...	Argüello et al.	Journal of Combinatorial Optimization	00183
The over-constrained airport gate assignment problem	Ding et al.	Computers and Operations Research	00130
Modelling delay propagation within an airport network	Pyrgiotis et al.	Transportation Research Part C: Emerging T...	00116
Slacks-based measure of efficiency of airports with airpla...	Lozano e Gutiérrez	Computers and Operations Research	00111
An approach to operational aircraft maintenance planning	Papakostas et al.	Decision Support Systems	00094
Exact Moment Matching Model of Transmission Lines an...	Yu e Kuh	IEEE Transactions on Very Large Scale Integr...	00075
On the factors that affect airline flight frequency and air...	Pai	50th Annual Transportation Research Forum...	00069
Estimation of delay propagation in the national aviation s...	Xu et al.	Proceedings of the 6th USA/Europe Air Traff...	00060
Dynamic cost indexing	Cook et al.	6th EUROCONTROL Innovative Research Wo...	00053
Flight delay propagation analysis with the detailed policy...	Schaefer e Millner	Proceedings of the IEEE International Confer...	00050
Modeling passenger travel and delays in the national air t...	Barnhart et al.	Operations Research	00048
Timing Modeling and Optimization Under the Transmissi...	Chen et al.	IEEE Transactions on Very Large Scale Integr...	00046
Propagation of delays in the national airspace system	Laskey et al.	Proceedings of the 22nd Conference on Unc...	00045
Estimating domestic US airline cost of delay based on Eur...	Ferguson et al.	Transportation Research Part C: Emerging T...	00044
Integration of analytic hierarchy process and data envelo...	Azadeh et al.	Expert Systems with Applications	00044
Characterization and prediction of air traffic delays	Rebollo e Balakrish...	Transportation Research Part C: Emerging T...	00043
Disruption management for an airline - Rescheduling of ...	Løve et al.	Lecture Notes in Computer Science (includi...	00041
Using random forests to diagnose aviation turbulence	Williams	Machine Learning	00034
The analysis of return on Investment For PHM applied to ...	Feldman et al.	2008 International Conference on Prognosti...	00034
Use of queuing models to estimate delay savings from 4...	Hansen et al.	Proceedings of the 8th USA/Europe Air Traff...	00033
Impact of ground delay program rationing rules on passe...	Manley e Sherry	Proceedings of the 2008 Integrated Commu...	00029
Optimal aircraft scheduling and routing at a terminal con...	Samà et al.	AGIFORS 55th Annual Symposium: Analytics...	00028
Optimal aircraft scheduling and routing at a terminal con...	Samà et al.	Transportation Research Part C: Emerging T...	00028

Exportar bibtex do Zotero para importação no R

Leitura de um artigo



JORGE CHAM ©THE STANFORD DAILY

phd.stanford.edu

Como eu leio um artigo?

- Estabeleça uma **taxonomia**, monte **categorias** de análise e **critérios quantitativos** para citação
- Filtre os artigos pelos critérios quantitativos
- Leia o abstract/resumo e veja se ele está relacionado ao que você pretende trabalhar
- Caso afirmativo, leia a introdução
 - Identifique a motivação, definição do problema, proposta de solução e indicativo de contribuição
 - Entra na taxonomia e nas categorias? (se não: justifique)
- Caso afirmativo, leia a conclusão
 - Cumpriu o prometido? Os resultados foram bons? (se não: justifique)
- Caso afirmativo, leia o artigo todo e faça um bom resumo
 - Anote os pontos fortes e fracos segundo uma **classificação**

Análise de métodos / categoria

```
# motagem de nuvem de palavras para análise (1)
bibtext.saveexcel(mydataset, "references.xlsx")
```

```
#analise (leitura manual dos abstracts) e carregamento dos atributos adicionais (2)
mydataset <- bibtext.mergecsv(mydataset, "references-filled.csv")
```

```
# filtragem de artigos e filtro adicionais
```

```
mydataset$rate <- mydataset$cites - (2015-mydataset$years) > 0
mydataset$delay <- (regexr('delay', mydataset$abstract) + regexr('delay', mydataset$title)) != -2
mydataset <- mydataset[mydataset$rate & mydataset$delay,]
```

1

JabRef - C:\Users\eduar\Dropbox\temp\systematic-search\scopus.bib* (BibTeX mode)

#	entry...	author/editor	title ^	ye...	journal/booktit...	bibtexkey	ranking
1	Article	Ben Ahmed et al.	A hybrid optimization-simulation approach for robust week...	2017	Transportation ...	ben_ahme...	
2	Article	Shuai et al.	A integrated IFCM-MPSO-SVM model for forecasting equip...	2017	Journal of Com...	shuai_inte...	
3	InProce...	Putra and Safillah	Application of Artificial Neural Network to Predict the use of ...	2017	IOP Conferenc...	putra_appli...	
4	Article	Kang and Hansen	Behavioral analysis of airline scheduled block time adjust...	2017	Transportation ...	kang_beha...	
5	Article	Belkoura et al.	Beyond linear delay multipliers in air transport	2017	Journal of Adva...	belkoura_b...	
6	InProce...	Baluch et al.	Complex analysis of united states flight data using a data ...	2017	2017 IEEE 7th ...	baluch_co...	
7	InProce...	Xiangmin and Li	Departure capacity prediction for hub airport in thunderstor...	2017	Proceedings of ...	xiangmin_...	
8	Article	Jacquillat et al.	Dynamic control of runway configurations and of arrival and...	2017	Transportation ...	jacquillat_d...	
9	InProce...	Balaban et al.	Dynamic routing of aircraft in the presence of adverse weat...	2017	17th AIAA Aviat...	balaban_d...	
10	Article	Ito and Nishinari	Effects of burstiness on the air transportation system	2017	Physical Revie...	ito_effects ...	

Article (shuai_integrated_2017-1)
Shuai, Y.; Song, T.-L.; Wang, J.-P.; Shen, H. & Zhan, W.-B.
A integrated IFCM-MPSO-SVM model for forecasting equipment support capability
Journal of Computers (Taiwan) 2017, 28, 233-245

Abstract: For the sake of improving the accuracy for forecasting equipment support capability, aiming at the problems in support vector machine forecast model, this paper improved fuzzy C-means clustering algorithm about outliers operation and optimization of distance in the clusters and among the clusters firstly. Then this method was used to optimize the input feature sets and reduce the redundancy and excess of the training sample sets. Furthermore, confirmed the Radial Basis Function by comparing the character of the kernel functions. At the same time, modified the particle swarm optimization algorithm about the particle speed, location and the inertia weight value to increase the diversity of particle swarm and avoided the convergence of searching, and this method is used to optimize the SVM parameters and built the forecast model. Finally the example showed the forecast index was objective and the modified forecasting model was accurate. © 2017, Computer Society of the Republic of China. All rights reserved.

2

references-filled.csv... Eduardo Ogasawara

	A	B	C	D	E	F	G	H	I	J	K	L
	citcode	title	data	Country	Ensemble airline	airport	propag	cancel	new	ML	OR	
1												
2	abel-aty	Detecting periodic patterns of arrival delay						1			1	
3	abelghar	A model for projecting flight delays during irregular operation						1				
4	ahmadbey	Analysis of	1	US		1						
5	ahmadbey	Decreasin	1	US		1		1				
6	anac_ager	Agv/m ncia	1	Brazil		1						
7	ariyawans	Review on state of art data mining and machine learning techniques for intelligent							1		1	
8	azadian_d	Dynamic routing of time-sensitive air cargo using real-time information								1		
9	balaban_c	Dynamic routing of aircraft in the presence of adverse weather using a (POMDP) fr								1		
10	balakrishr	Accuracy of	1	US						1	1	
11	balakrishr	Airport ta	1	US			1			1	1	
12	balakrishr	Estimating	1	US		1				1		
13	balakrishr	Control and optimization algorithms for air transportation systems								1		
14	baluch_co	Complex i	1	US						1	1	
15	baspinar_	A (Data)-{	1	Europe			1	1				
16	baspinar_	Large (Sca	1	Europe		1						
17	baumgart	The impact of hubbing concentration on flight delays within airline networks: (An)								1		
18	beatty_pr	Preliminary evaluation of flight delay propagation through an								1		
19	belcastro	Using scal	1	US		1				1	1	
20	belkoura	Beyond III	1	Europe				1				
21	ben_ahme	A hybrid optimization-simulation approach for robust weekly								1		
22	bertsimas	Unified op	1	US						1		
23	bhadra_ye	You (expect to) get what you pay for: (A) system approach to delay, fare, and comp								1		
24	biesiada_j	Gamma-ray burst neutrinos, (Lorenz) invariance violation and the influence of back								1		
25	bloem_gn	Ground dk	1	US			1			1		
26	boswell_a	Analysis of downstream impacts of air traffic delay								1		
27	britto_jm	The impact of flight delays on passenger demand and societal welfare								1		
28	bts_burea	The (Bure	1	US		1						
29	bulalo_al	Airport ca	1	Europe						1	1	
30	cai_novel	A novel biobjective risk-based model for stochastic air traffic network flow optimiz								1		

Marcação dos artigos

- Leia os artigos completos procurando identificá-los quanto:
 - Abordagens
 - Critérios para comparação
 - Limitações
 - Diferenças em relação a sua proposta
- Procure deixar marcado nos PDF as principais características
- Prepare um parágrafo sintetizando cada artigo segundo os critérios de comparação, limitações e diferenças em relação a sua proposta

Análise de artigos para citar / não citar

```
# identifica artigos não citados ainda
citations <- read.bib('scopus-count.bib')
mydataset <- bibtext.dataset(citations)
to_add <- bibtext.diffbib(mydataset, 'references.bib')

# identifica artigos incluídos não presentes no mapa sistemático
used_citations <- read.bib('references.bib')
useddataset <- bibtext.dataset(used_citations)
snowballing <- bibtext.diffbib(useddataset, 'scopus-count.bib')
```

Citar é muito importante, mas existe a necessidade de um balanço entre as referencias citadas e o tamanho do artigo

3.3.1 Data Sources

The type of datasets from the air transportation system are mainly related to airlines, airports or ensemble. Since airlines and airports commonly do not share their databases with the entire community, they are often used by collaborators of those institutions. Ensemble datasets may include both carriers, airports, and additional information provided by governmental agencies, regulatory authorities, and service providers. Table 1 displays the type of datasets by regions. It presents the number of publications and the top three most cited papers in each category. Governmental agencies usually provide public access to their databases with different granularity. It is noticed that data from The United States Department of Transportation⁽⁴³⁾, primarily through The Federal Aviation Administration⁽⁵²⁾ and The Bureau of Transportation Statistics databases⁽²⁶⁾ are widely used to obtain information about flights. The Eurocontrol⁽⁴⁶⁾ database is provided by an intergovernmental organization in Europe. This dataset is also used intensively in flight delay studies⁽¹⁰³⁾.

Table 1
Number of sources of real data about the air transportation system per region

Region	Ensemble	Airline	Airport
Asia	2 ^(89,111)	1 ⁽¹⁰⁴⁾	1 ⁽¹²¹⁾
Brazil	2 ^(110,5)	0	0
Europe	7 ^(30,29,81)	2 ^(109,58)	7 ^(103,27,96)
US	11 ^(90,112,128)	7 ^(78,3,4)	16 ^(55,10,54)

Other related datasets, such as weather, may be obtained from governmental databases or service providers. This includes, for example, The National Oceanic and Atmospheric Administration of the United States⁽⁹²⁾. In fact, authors may use more than one source to develop their models. Datasets from United States Department of Transportation⁽⁴³⁾, National Oceanic and Atmospheric Administration⁽⁹²⁾, and Weather Company⁽¹¹³⁾ are commonly used to build delay prediction models.

Additionally, some researchers^(130,131) create synthetic datasets to evaluate their models instead of using real data. For example, Zou et al.⁽¹³¹⁾ developed a market scenario, considering airport capacity, links, frequency, and characteristics of flights and passenger demand.

Escrita menos adequada

3.4.3 Network Representation

Network representation encompasses the study of flight systems according to a graph theory. Abdelghany et al.⁽²⁾ built direct acyclic graphs to model the schedule of an airline (including flight times and resources availability) to detect disruptions and their impacts on the rest of the network. They used the classical shortest path algorithm to evaluate propagation effects.

Ahmadbeygi et al.⁽³⁾ built propagation trees to compare two different airlines, one operating in a conventional hub-and-spoke scheme and the other in a low-cost point-to-point system. Xu et al.⁽¹²³⁾ and Wu et al.⁽¹²⁰⁾ built a Bayesian network to model delay propagation. Baspinar⁽¹⁴⁾ built a network-epidemic process using historical flight-track data of Europe to create a novel delay propagation model.

Dicas finais

Remover referencias não utilizadas

```
java -jar unusedref references.bib main.tex
```

Limpar campos não úteis ao artigo

```
java -jar latex.jar cleanbib references.bib
```

Mapeamento de citações (outras codificações) versus Zotero

```
java -jar latex.jar map-citations main.tex references-org.bib references.bib
```

Código no GitHub

```
https://github.com/eogasawara/mylibrary
```


Pesquisa na área

- Automatizar o processo de revisão via snowballing
- Identificação automática de taxonomia
- Identificação automática de categorias

Elaboração de mini surveys

Seminários da EIC

Eduardo Ogasawara
<http://eic.cefet-rj.br/~eogasawara>