

# Método Bili

## Uma otimização da Bibliometria

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## Como vocês realizam as buscas por artigos?

WEB OF SCIENCE



ORCID



RESEARCHERID

Scopus®



researchfish

SRI

Surrey Research Insight

MENDELEY



THE CONVERSATION



Academia.edu

share research



ResearchGate

Google™  
Scholar



PUBLONS  
EVALUATING ACADEMIC RESEARCH

## Pouco tempo para muito resultado

Google Acadêmico

**Busca de artigos importantes**

Aproximadamente 100.000 resultados (0,04 s)

**Artigos**

A qualquer momento  
Desde 2021  
Desde 2020  
Desde 2017  
Período específico...

**Consultar por categoria**

Consultar por disciplina

Em que tipo de documento  
Pesquisar paginas em Português

incluir patentes  
 excluir citações

Criar alerta

**perm/Elasps de buseca e seleção de artigos em revistas sistemáticas da literatura** jrmra.scielosp.org

**Introdução à Gestão Epidemiológica e de Saúde - 2014** SIEGOLI Public Health

Entre os resultados de um componente da literatura, situa-se o "CSE", inspirado no original que introduziu a estratégia de busca e seleção de artigos em revistas sistemáticas na estratégia de busca para pesquisas de artigos importantes, desenvolvida em 2010.

0 perm/ Cited by 59 Artigos relacionados Todas as 25 versões... 30

**perm/Estudos de revisão sistemática: um guia para estrutura intensiva da evidência científica** jrmra.scielo.br

Os pesquisadores devem se certificar de que todos os artigos importantes ou que possam ter algum impacto na conclusão da revisão sejam incluídos. A literatura de evidências tem sede cem artigos que devem ser considerados para a inclusão na revisão.

0 perm/ Cited by 154 Artigos relacionados Todas as 15 versões... 30

**perm/Importância do uso corrente dos descriptores nos artigos científicos** jrmra.scielo.br

Na literatura, é comum que os autores utilizem termos genéricos para descreverem os artigos, a necessidade da introdução de descriptores padronizados e seu uso baseado em estudos.... A aplicação de descriptores padronizados no resumo ajuda a facilitar a busca e a recuperação de artigos que possuem

0 perm/ Cited by 202 Artigos relacionados Todas as 22 versões... 30

The screenshot shows the Scopus search results for the query "solar energy". The top navigation bar includes links for Search, Sources, Lists, SciVal, Library catalogue, and user account information. The main title is "105,248 document results". Below the title, there are search filters for Title-ABS-KEY, Edit, Save, Set alert, and Set feed. A "Refine results" section contains dropdown menus for Access type (Open Access, Other), Year (2020), and Document type (Article, Conference paper, Book chapter, etc.). The search results table has columns for Title, Authors, Year, Source, and Cited by. One result is highlighted: "Co2/ultrathin-film with liquid-filled state-assisted hole transport for standalone solar water splitting" by Pei, L., Liu, Y., Yan, L., ... (Gatzev, M.), Hagfeldt, A. from Nature Communications, 13(1), 318. At the bottom, there are buttons for View cited by, Full Text, View at Publisher, and Related documents.

The screenshot shows a search results page for "Dynamic path planning". At the top, there are search filters for "Conferences (5,245)", "Journals (948)", "Magazines (40)", "Early Access Articles (45)", "Standards (7)", "Books (6)", and "Courses (1)". Below these filters, there are two sections: "Show" and "Year". The "Show" section has radio buttons for "All Results" (selected) and "Open Access Only". The "Year" section has dropdown menus for "Single Year" (set to 1960) and "Range" (set to 2021). The main search results list includes:

- An Extension of Dynamic Programming Algorithm in Robotic Path Planning (Shanshan Ji, Linzhe Yang, 2012 International Conference on Computer Science and Service System, Year: 2012 | Conference Paper | Publisher: IEEE, Cited by: Papers (3), Abstract, 0 more, 169 KB,
- Dynamic programming field based environment learning and path planning for mobile robots (Yuhu Yuan, Zhenzhe Cao, Zhenmiao Hou, Min Tan,

## Tempo e precisão

A tecnologia existe para ajudar a nos tornar cada vez mais rápidos e precisos no que fazemos.

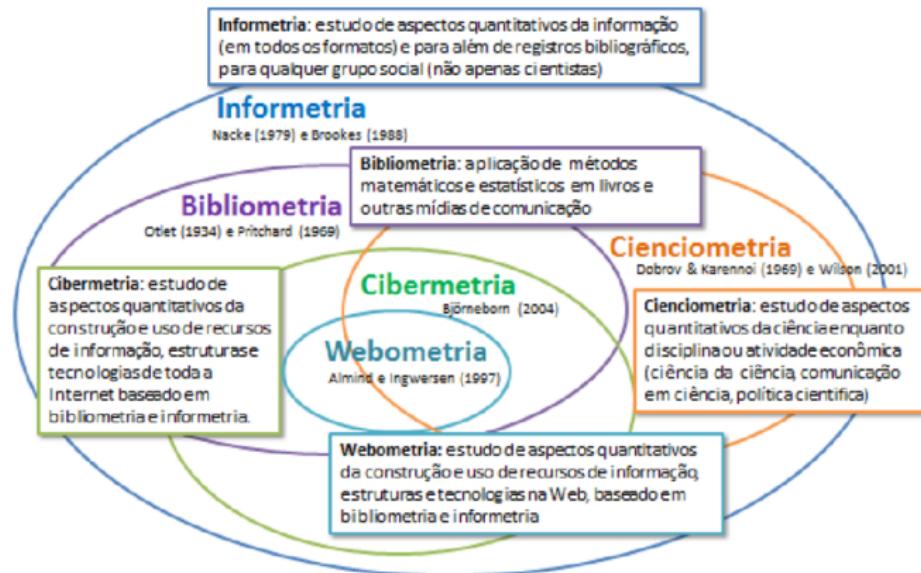
Fatores que impulsiona a ser rápido e preciso:

- ▶ Competitividade
- ▶ Prazo de entrega
- ▶ Concluir um trabalho



# Existe algum método para melhorar a busca de artigos?

- ▶ Biblioteconomia
- ▶ Método BiLi

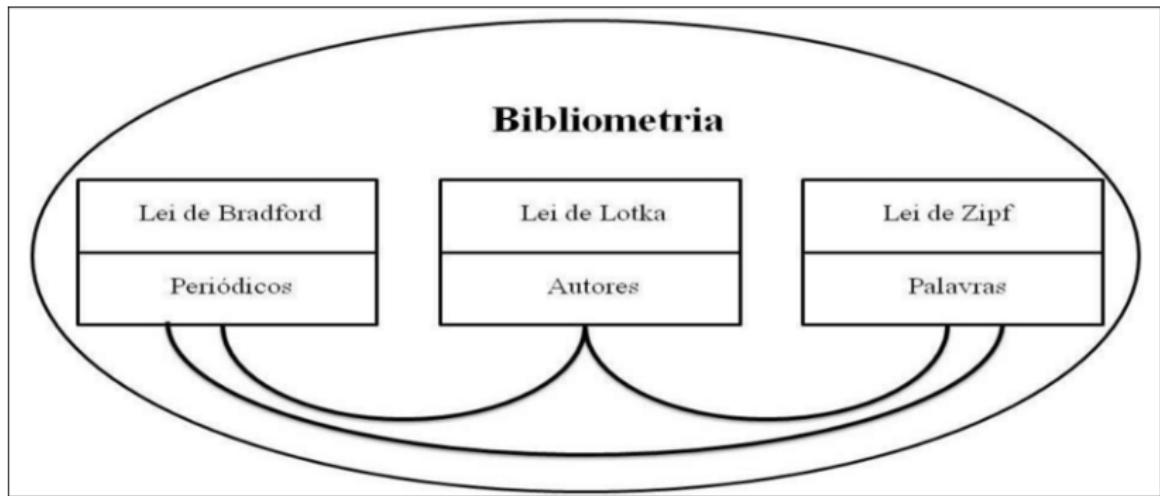


# Bibliometria

- ▶ Aplica métodos estatísticos e matemáticos para analisar e construir indicadores sobre a dinâmica e evolução da informação científica e tecnológica.
- ▶ Medir o desenvolvimento, a qualidade e o impacto de uma série de artigos escolhidos.
- ▶ Paul Otlet, 1934



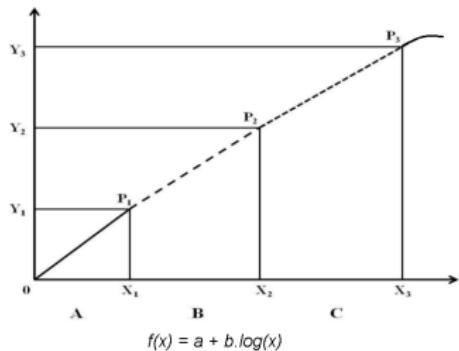
# Três leis básicas



# Lei de Bradford

## Lei da dispersão

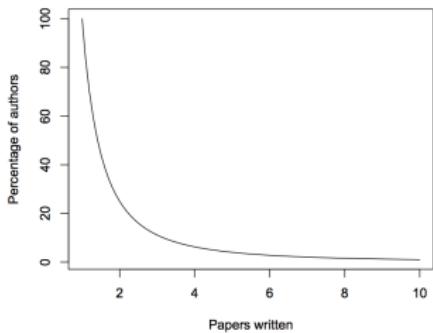
- ▶ Medir produtividade dos periódicos
- ▶ Estabelecer núcleo e as áreas de dispersão
- ▶ Permite fazer a estimativa do grau de relevância das revistas de conhecimentos



# Lei de Lotka

## Lei do quadrado inverso

- ▶ Produtividade dos autores
- ▶ Relação entre o número de autores e o número de artigos publicados
- ▶ Alguns autores de maior prestígio produzem muito e muitos autores de menor prestígio produzem pouco
- ▶ Define as maiores contribuições dos pesquisadores

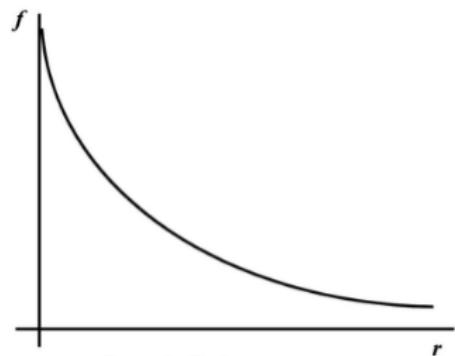


$$Y = \frac{C}{X^n}$$

# Lei de Zipf

Lei do menor esforço

- ▶ Trata e mede a frequência de ocorrência de palavras em vários textos
- ▶ As palavras mais usadas indicam o assunto



# Fator de Impacto

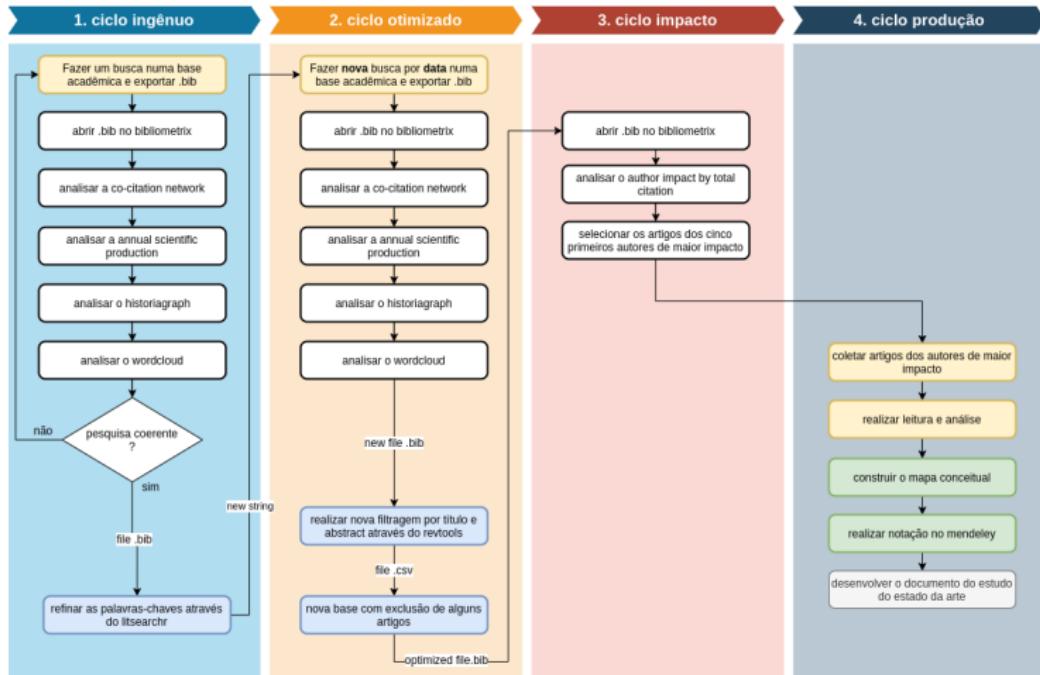
Medida que reflete o número médio de citações de artigos científicos publicados.  
Avaliar a importância de um dado periódico em sua área.



# Principais estudos da Bibliometria

Leis e Princípios	Focos de Estudo	Principais Aplicações
Lei de Bradford	periódicos	estimar o grau de relevância de periódicos
Lei de Lotka	autores	estimar o grau de relevância de autores
Leis de Zipf	palavras	indexação automática de artigos científicos e tecnológicos
Fator de Imediatismo ou de Impacto	citações	estimar o grau de relevância de artigos, cientistas e periódicos científicos
Acoplamento Bibliográfico	citações	estimar o grau de ligação de dois ou mais artigos
Co-citação	citações	estimar o grau de ligação de dois ou mais artigos
Obsolescência da Literatura	citações	estimar o declínio da literatura de determinada área do conhecimento
Vida-média	citações	estimar a vida-média de uma unidade da literatura de dada área do conhecimento

# Método BiLi

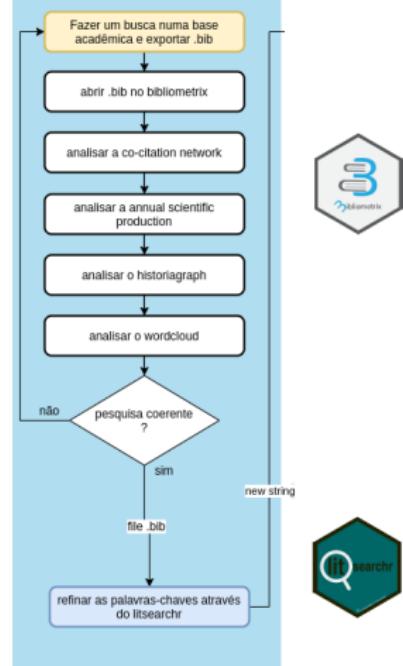


## Pré-Requisito

- ▶ Instalar o R  $\geq 3.5$
- ▶ Instalar os pacotes do R
  - ▶ Bibliometrix
  - ▶ LitSearchR
  - ▶ RevTools
- ▶ Instalar o Mendeley
- ▶ Instalar o CMapTools

# 1º Ciclo

## Ciclo Ingênuo



# 1º Ciclo - Busca

Fazer uma busca em uma base acadêmica e exportar .bib

- ▶ Web Of Science
- ▶ Scopus
- ▶ Dimension
- ▶ PubMed
- ▶ Cochrane Library

The screenshot shows a search results page from a database. At the top, it says "Showing 1-25 of 25,310 for Robot development". Below this are filters for Conferences (21,349), Books (75), Journals (3,094), Standards (4), Magazines, and Courses. The "Show" dropdown is set to "All Results". A "Select All on Page" checkbox is checked. The main result listed is "Development of a robot simulation system for remotely operating mining and robot performance verification" by Kuniaki Kawabata, Kentaro Suzuki, Mitsuhiro Iseki, Kazunori Horiech, 2017 14th International Conference on Ubiquitous Robots and Ambient Intelligence (URAI) [Conference Paper] | Publisher: IEEE. It has 1049 citations. Below the result are buttons for "Abstract", "Citation", and "Export".  
  
A modal dialog box titled "Exportar resultados" is open in the bottom right. It has two sections: "Formatos de exportação:" and "Exportar:". In "Formatos de exportação:", "Bibtex" is selected. In "Exportar:", "Esta página" is selected. At the bottom right of the dialog is a blue "Exportar" button.

# 1º Ciclo - Bibliometrix

## Abrir o Bibliometrix no R

Atividades RStudio ▾

File Edit Code View Plots Session Build Debug Profile T

+ Go to file/function Addins ▾

Console Terminal Jobs ~/ ◊

```
> library(bibliometrix)
To cite bibliometrix in publications, please use:

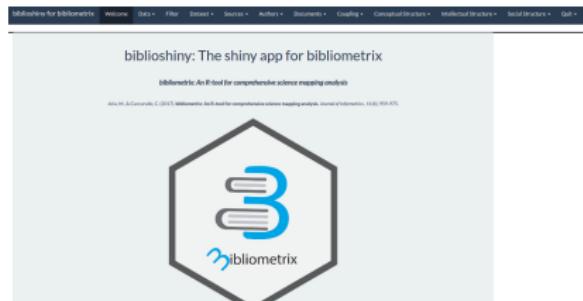
Aria, M. & Cuccurullo, C. (2017) bibliometrix: An R-tool for comprehensive science mapping analysis, Journal of Informetrics, 11(4), pp 959-975, Elsevier.
```

<http://www.bibliometrix.org>

Help us to keep Bibliometrix free to download and use by contributing with a small donation to support our research team (<https://bibliometrix.org/donate.html>)

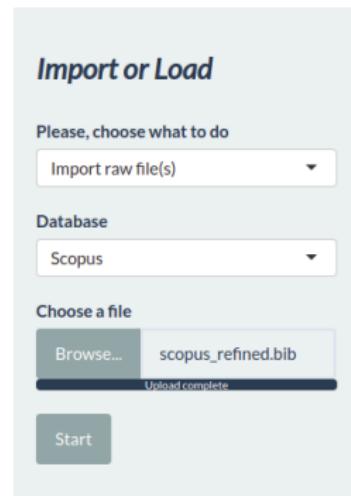
To start with the shiny web-interface, please digit:  
biblioshiny()

```
> biblioshiny()
```



# 1º Ciclo - Bibliometrix

## Importar o .bib



# 1º Ciclo - Bibliometrix

## Visualização dos dados importados

Welcome Data Filter Dataset Sources Authors Documents Coupling Conceptual Structure Intellectual Structure Social Structure

Quit

Show 50 rows Print Search:

**Import or Load**

Please, choose what to do

Import raw file(s) Database Scopus Choose a file Browse... scopus\_refined.bib Upload complete Start

DOI	AU	DE	ID	C1	CR	JI
<a href="https://doi.org/10.1007/978-981-15-4917-3_33">10.1007/978-981-15-4917-3_33</a>	MAT DARUS IZAL-KHAFAJI AAM	CUCKOO SEARCH ALGORITHM; FLEXIBLE UNDERWATER MANIPULATOR; FLOWER POLLINATION ALGORITHM; PID CONTROLLER	BIOIMMETRICS; ELECTRIC CONTROL EQUIPMENT; FLEXIBLE MANIPULATORS; HEURISTIC METHODS; IMAGE PROCESSING; OPTIMIZATION; PARAMETER ESTIMATION; PROPORTIONAL	UNIVERSITI TEKNOLOGI MALAYSIA, JOHOR BAHRU, JOHOR, 81310, MALAYSIA	DARUS, I.Z.M., ZAHIDI RAHMAN, T.A., MAILAH, M., EXPERIMENTAL EVALUATION OF ACTIVE FORCE VIBRATION CONTROL OF A FLEXIBLE STRUCTURE USING SMART MATERIAL	SMART II SYST. TEC
<a href="https://doi.org/10.1109/ICMA49215.2020.9239883">10.1109/ICMA49215.2020.9239883</a>	HE J,WEI Y,ZHAO Y,ZHENG Z,FU J	ACTIVE DISTURBANCE REJECTION CONTROL; ADRC; TERMINAL SLIDING MODE CONTROL; UNDERWATER	DISTURBANCE REJECTION; MANIPULATORS; ACTIVE DISTURBANCE REJECTION CONTROL; EXTERNAL DISTURBANCES; FLOW	HARBIN ENGINEERING UNIVERSITY, DEPARTMENT OF AUTOMATION, HARBIN, 150001, CHINA	GUSEV A.L., GOLOVIN A.S. ABOUT THE DEVELOPMENT OF A TECHNOLOGICAL COMPLEX WITH A MANIPULATOR FOR AN UNMANNED UNDERWATER VEHICLE (2019) IOP CONFERENCE	IEEE INT. MECHATRONICS AUTOM.

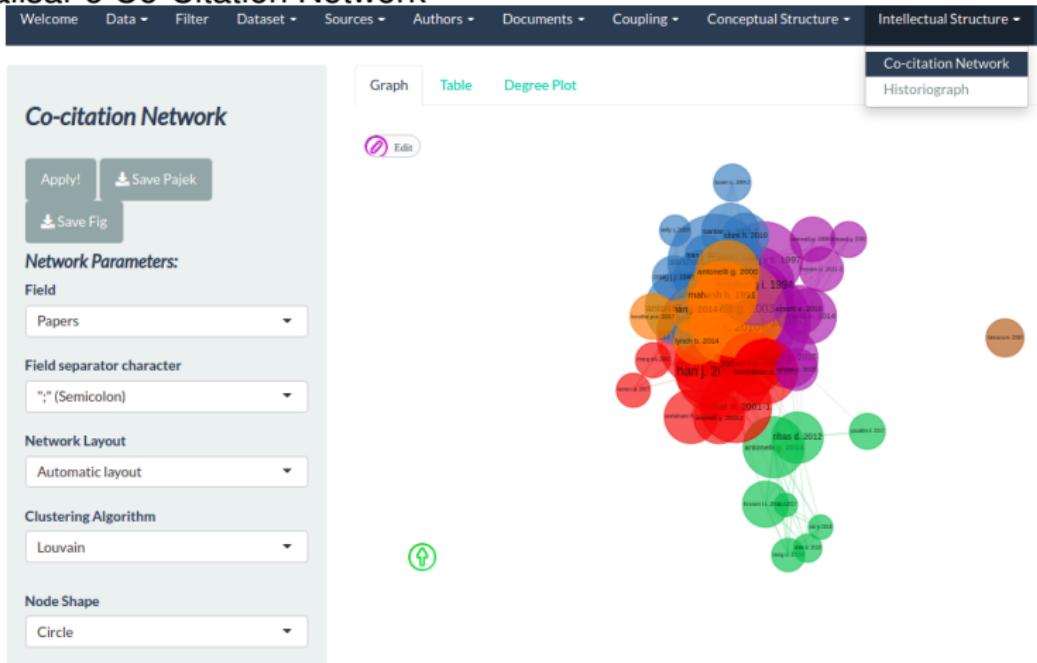
# 1º Ciclo - Bibliometrix

## Analisar o Co-Citation Network

The screenshot shows the 'Co-citation Network' analysis section of the Bibliometrix software. At the top, there is a navigation bar with tabs: Welcome, Data, Filter, Dataset, Sources, Authors, Documents, Coupling, Conceptual Structure, and Intellectual Structure. The 'Intellectual Structure' tab is currently selected, as indicated by a dark blue background. A dropdown menu under 'Intellectual Structure' shows 'Co-citation Network' and 'Historiograph'. Below the navigation bar, there are three tabs: Graph, Table, and Degree Plot. The 'Graph' tab is selected. On the left, there is a panel titled 'Co-citation Network' with buttons for 'Apply!', 'Save Pajek', and 'Save Fig'. Underneath, there are sections for 'Network Parameters' (Field set to 'Papers') and 'Field separator character' (set to ';' (Semicolon)).

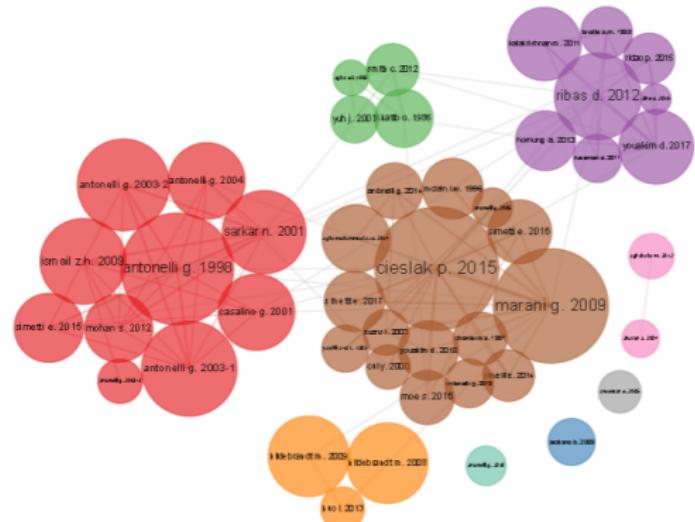
# 1º Ciclo - Bibliometrix

## Analisar o Co-Citation Network



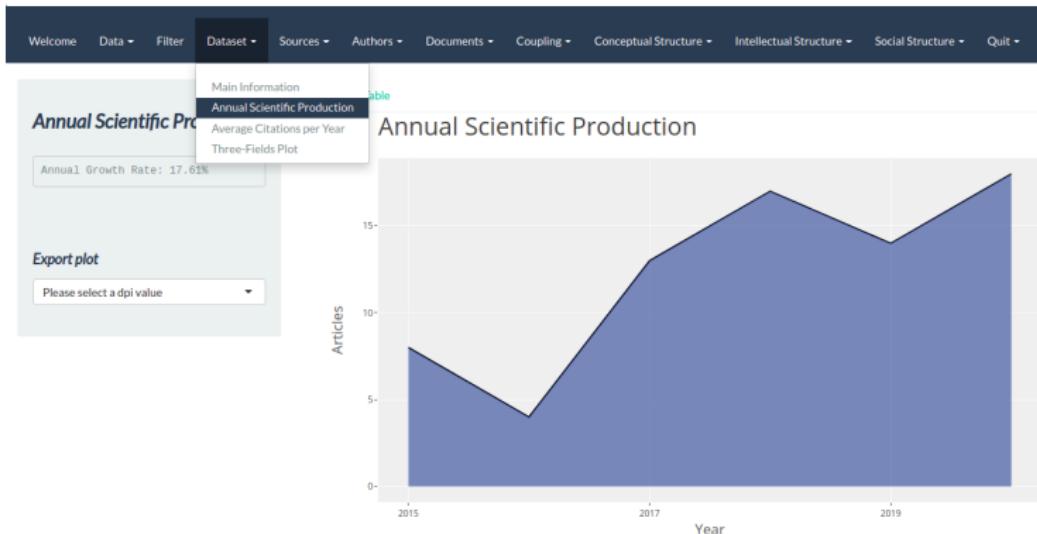
# 1º Ciclo - Bibliometrix

## Analisar o Co-Citation Network



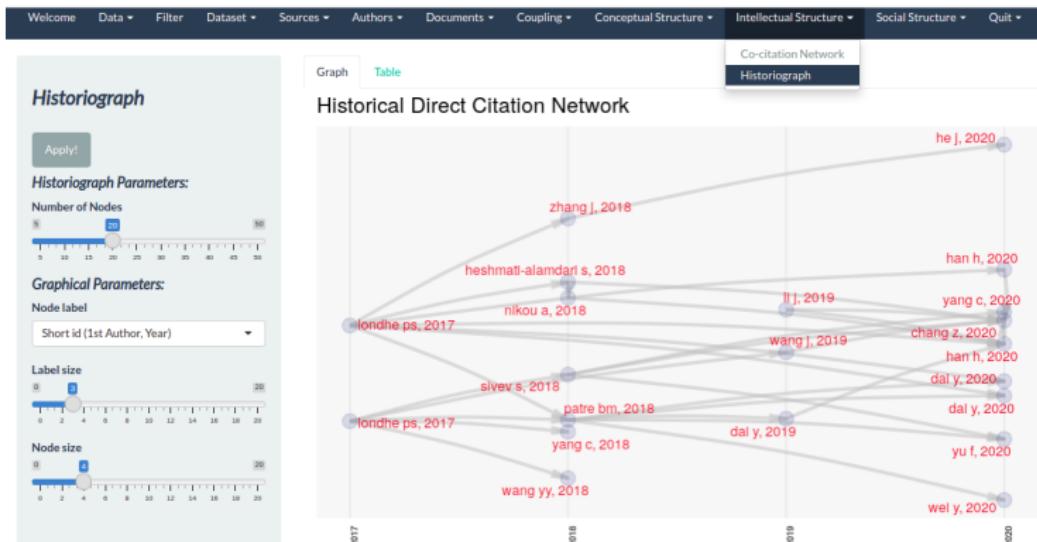
# 1º Ciclo - Bibliometrix

## Analizar o Annual Scientific Production



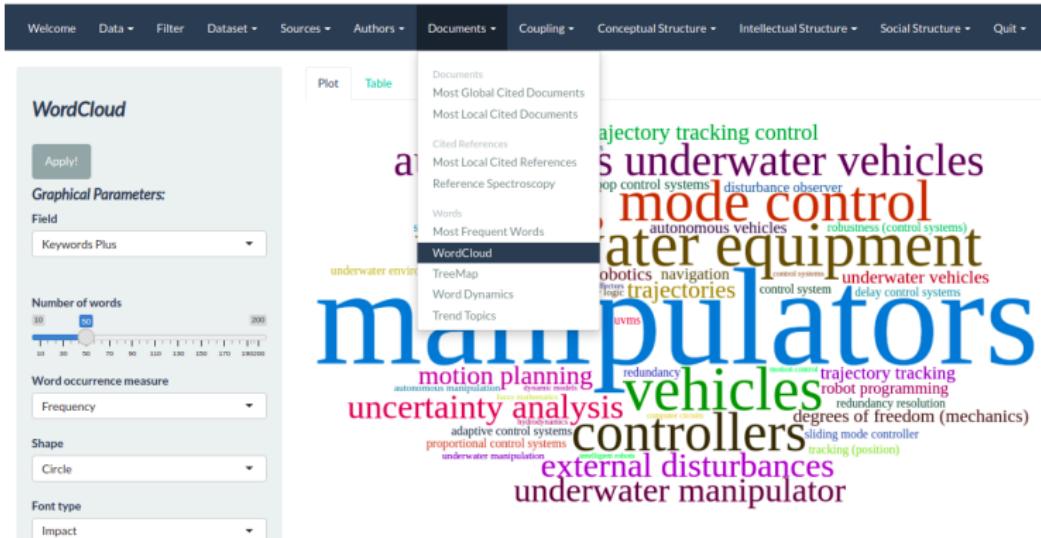
# 1º Ciclo - Bibliometrix

## Analisar o Historiograph



# 1º Ciclo - Bibliometrix

## Analisar o WorldCloud



1º Ciclo - Bibliometrix

## Analizar o WorldCloud



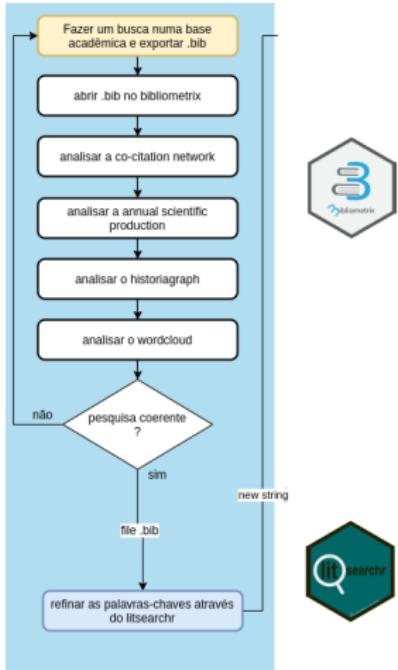
# 1º Ciclo - Bibliometrix

## Analisar o WorldCloud



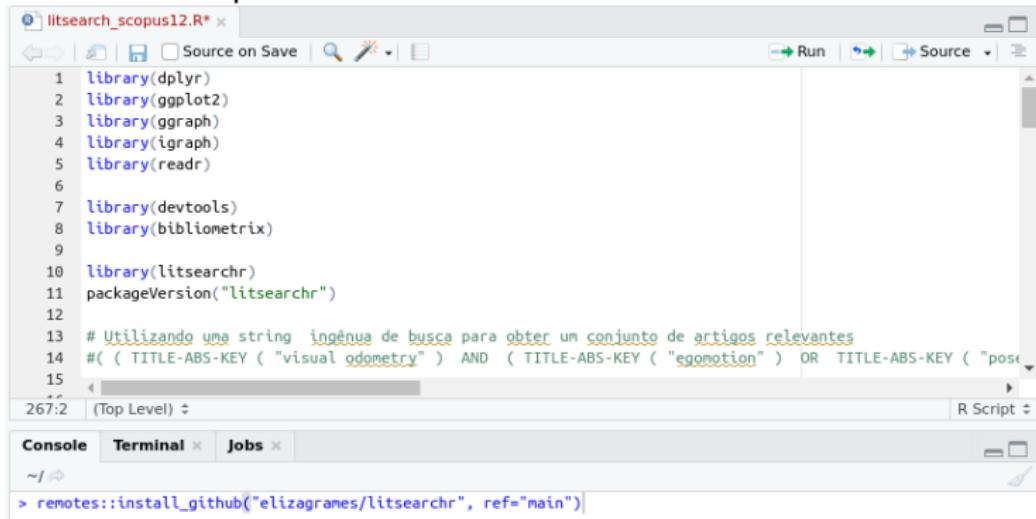
# 1º Ciclo

## Ciclo Ingênuo



# 1º Ciclo - LitSearchR

É um pacote R para facilitar o desenvolvimento de estratégia de busca quase automática para revisões sistemáticas.



The screenshot shows the RStudio interface. The top bar has tabs for 'File', 'Edit', 'Source', 'Run', 'Tools', and 'Help'. Below the top bar, there's a toolbar with icons for file operations like Open, Save, and Print, along with 'Source on Save', a search icon, and a 'Run' button. The main workspace shows the code for 'litsearch\_scopus12.R'. The code includes imports for dplyr, ggplot2, ggraph, igraph, readr, devtools, and bibliometrix, followed by the library call for 'litsearchr'. A multi-line comment explains the search strategy using TITLE-ABS-KEY terms. The bottom part of the interface shows the 'Console' tab active, with the command '> remotes::install\_github("elizagrames/litsearchr", ref="main")' entered and ready to be run.

```
library(dplyr)
library(ggplot2)
library(ggraph)
library(igraph)
library(readr)
library(devtools)
library(bibliometrix)
library(litsearchr)
packageVersion("litsearchr")

# Utilizando uma string ingênuas de busca para obter um conjunto de artigos relevantes
#( (TITLE-ABS-KEY ("visual odometry")) AND (TITLE-ABS-KEY ("egomotion")) OR TITLE-ABS-KEY ("pose"))
4

> remotes::install_github("elizagrames/litsearchr", ref="main")
```

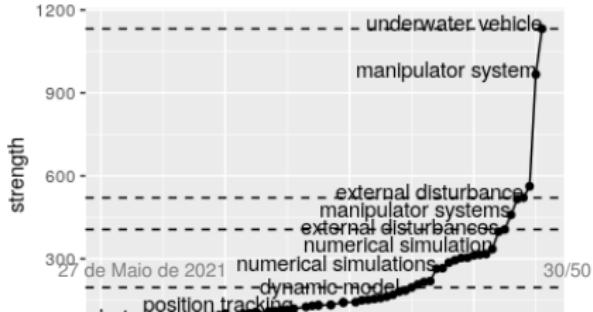
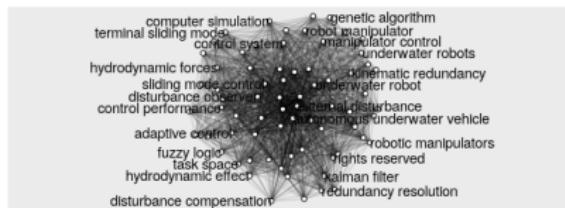
# 1º Ciclo - LitSearchR

Retorna um novo texto de busca

```
Console Terminal Jobs 
~/ 
This is going to write .txt files to your computer containing the search strings. 
Are you sure you want to write the files? 

1: yes 
2: no 

Selection: 1 
[1] "English is written" 
[1] "(\\\"manipulator system\\\" OR \\\"underwater manipulator\\\" OR \\\"vehicle manipulator system\\\" OR \\\"underwater vehicle manipulator system\\\") AND (\\\"underwater manipulator\\\" OR \\\"underwater robot\\\" OR \\\"underwater vehicle\\\" OR \\\"autonomous underwater\\\") AND (\\\"disturbance observer\\\" OR \\\"external disturbances\\\" OR \\\"motion planning\\\" OR \\\"trajectory tracking\\\" OR \\\"sliding mode control\\\"))" 
> |
```



# 1º Ciclo - LitSearchR

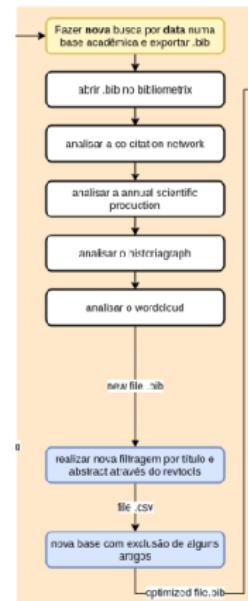
## Refinar palavras chaves

```
Source on Save | Run | Source |   
1 search_directory <- "~/Documentos/AUM/litsearchr_AUM/apresentacao"  
2  
3 stopwrlds <- c("advances", "analyse", "analysed", "analyses")  
4  
5 grouped_terms <- list(  
6   manipulator=selected_terms[c(17, 10, 22, 20)],  
7   underwater=selected_terms[c(10, 11, 13, 12, 15)],  
8   techniques=selected_terms[c(3, 4, 6, 9, 8)]  
9 )  
10  
11 new_search_directory <- "~/Documentos/AUM/litsearchr_AUM/new"  
12  
13 important_titles <- c(  
14   "Collision detection for underwater ROV manipulator systems"  
15 )
```

12:1 (Top Level) R Script

## 2º Ciclo

### Ciclo Otimizado



## 2º Ciclo - Nova Busca



Scopus

Search Sources Lists SciVal ↗



### Advanced search

[Basic  
Search](#)

[Advanced](#)

[Search tips](#)

Enter query string

("manipulator system" OR "underwater manipulator" OR "vehicle manipulator system" OR "underwater vehicle manipulator system") AND ("underwater manipulator" OR "underwater robot" OR "underwater vehicle" OR "autonomous underwater") AND ("disturbance observer" OR "external disturbances" OR "motion planning" OR "trajectory tracking" OR "sliding mode control")

[Outline query](#)   [Add Author name / Affiliation](#)   [Clear form](#)   [Search](#)

# 2º Ciclo - Bibliometrix

## Importar o novo .bib

Welcome Data Filter Dataset Sources Authors Documents Coupling Conceptual Structure Intellectual Structure Social Structure

Quit

Show 50 rows Print Search:

**Import or Load**

Please, choose what to do  
Import raw file(s) ▾  
Database Scopus  
Choose a file  
Browse... scopus\_refined.bib  
Upload complete  
Start

DOI	AU	DE	ID	C1	CR	J1
<a href="https://doi.org/10.1007/978-981-15-4917-3_33">10.1007/978-981-15-4917-3_33</a>	MAT DARUS IZAL-KHAFAJI AAM	CUCKOO SEARCH ALGORITHM; FLEXIBLE UNDERWATER MANIPULATOR; FLOWER POLLINATION ALGORITHM; PID CONTROLLER	BIOIMMETRICS; ELECTRIC CONTROL EQUIPMENT; FLEXIBLE MANIPULATORS; HEURISTIC METHODS; IMAGE PROCESSING; OPTIMIZATION; PARAMETER ESTIMATION; PROPORTIONAL	UNIVERSITI TEKNOLOGI MALAYSIA, JOHOR BAHRU, JOHOR, 81310, MALAYSIA	DARUS, I.Z.M., ZAHIDI RAHMAN, T.A., MAILAH, M., EXPERIMENTAL EVALUATION OF ACTIVE FORCE VIBRATION CONTROL OF A FLEXIBLE STRUCTURE USING SMART MATERIAL	SMART II SYST. TEC
<a href="https://doi.org/10.1109/ICMA49215.2020.9239883">10.1109/ICMA49215.2020.9239883</a>	HE J,WEI Y,ZHAO Y,ZHENG Z,FU J	ACTIVE DISTURBANCE REJECTION CONTROL; ADRC; TERMINAL SLIDING MODE CONTROL; UNDERWATER	DISTURBANCE REJECTION; MANIPULATORS; ACTIVE DISTURBANCE REJECTION CONTROL; EXTERNAL DISTURBANCES; FLOW	HARBIN ENGINEERING UNIVERSITY, DEPARTMENT OF AUTOMATION, HARBIN, 150001, CHINA	GUSEV, A.L., GOLOVIN, E.S., ABOUT THE DEVELOPMENT OF A TECHNOLOGICAL COMPLEX WITH A MANIPULATOR FOR AN UNMANNED UNDERWATER VEHICLE (2019) IOP CONFERENCE	IEEE INT. MECHATRONICS AUTOM.

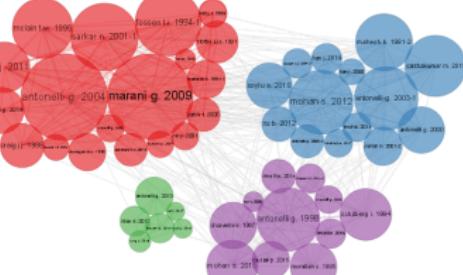
2º Ciclo - Bibliometrix

## Analisar o Co-Citation Network

1º Ciclo



2º Ciclo

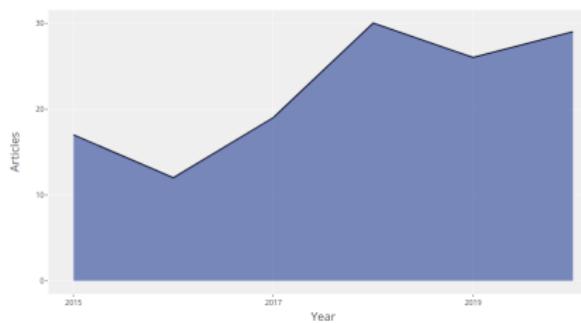


## 2º Ciclo - Bibliometrix

Analisar o novo Annual Scientific Production

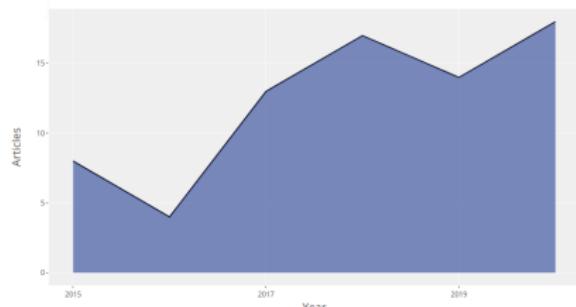
### 1º Ciclo

Annual Scientific Production



### 2º Ciclo

Annual Scientific Production

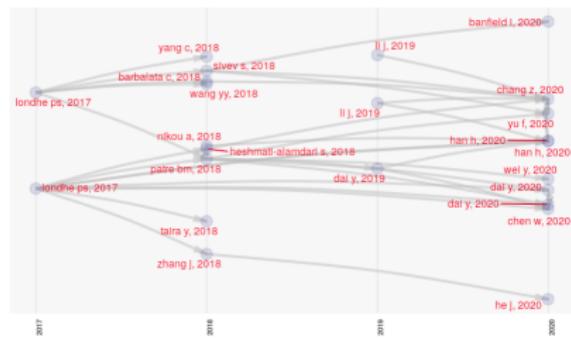


## 2º Ciclo - Bibliometrix

### Analizar o Historiograph

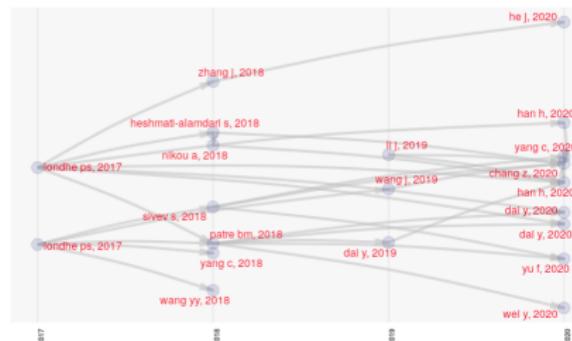
#### 1º Ciclo

Historical Direct Citation Network



#### 2º Ciclo

Historical Direct Citation Network



2º Ciclo - Bibliometrix

## Analisar o WorldCloud

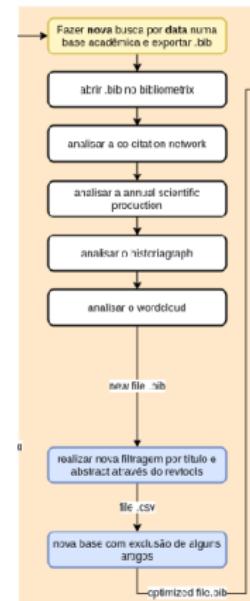


2º Ciclo



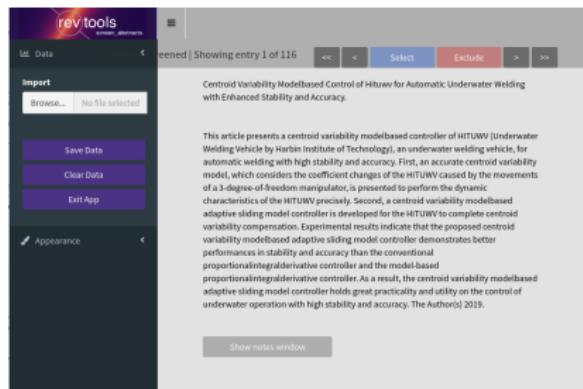
## 2º Ciclo

### Ciclo Otimizado



## 2º Ciclo - RevTools

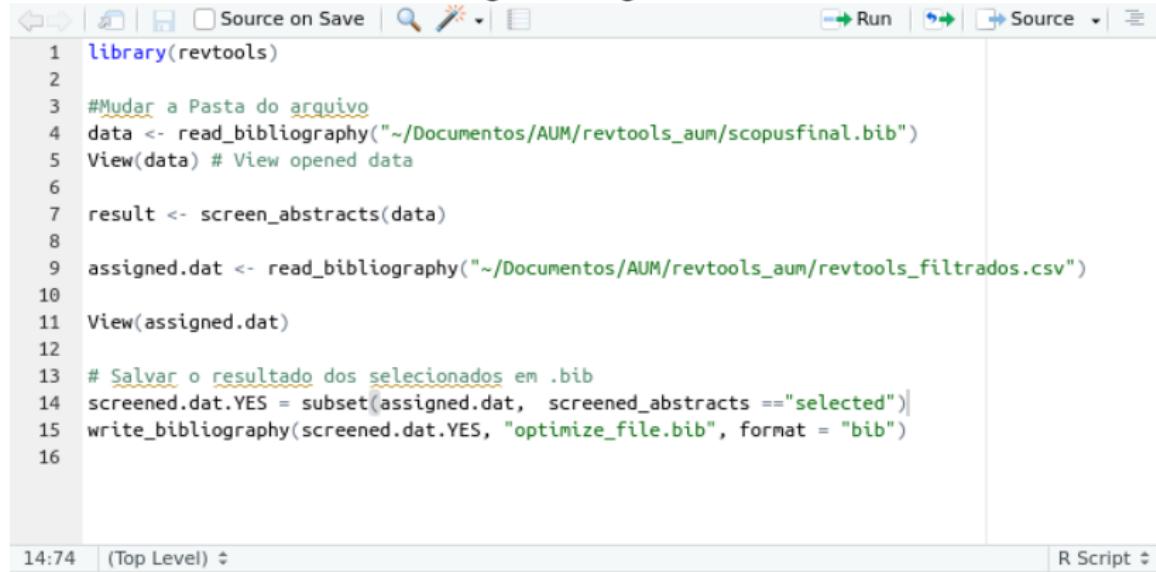
- ▶ É um pacote de R para apoiar pesquisadores que trabalham em projetos de síntese de evidências
- ▶ Visualizar padrões em dados bibliográficos
- ▶ Selecionar ou excluir interativamente artigos ou palavras individuais



## 2º Ciclo - RevTools

Realizar uma nova filtragem por título e resumo através do RevTools.

Nova base com exclusão de alguns artigos.



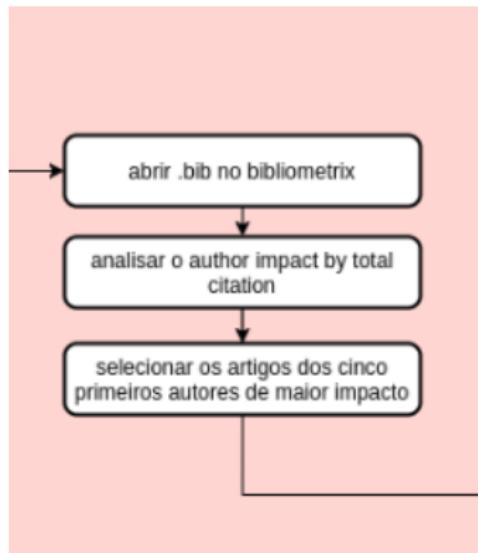
The screenshot shows an RStudio interface with an R script editor. The code is as follows:

```
library(revtools)
#Mudar a Pasta do arquivo
data <- read_bibliography("~/Documentos/AUM/revtools_aum/scopusfinal.bib")
View(data) # View opened data
result <- screen_abstracts(data)
assigned.dat <- read_bibliography("~/Documentos/AUM/revtools_aum/revtools_filtrados.csv")
View(assigned.dat)
# Salvar o resultado dos selecionados em .bib
screened.dat.YES = subset(assigned.dat, screened_abstracts == "selected")
write_bibliography(screened.dat.YES, "optimize_file.bib", format = "bib")
```

The status bar at the bottom left shows "14:74" and "(Top Level)". The status bar at the bottom right shows "R Script".

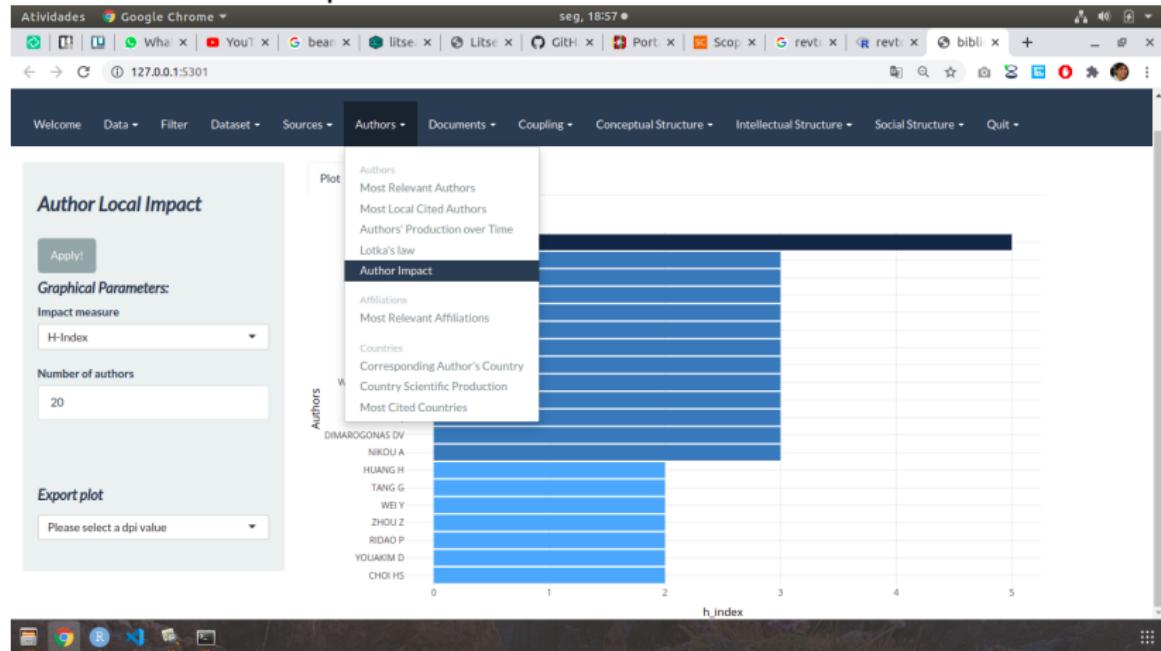
## 3º Ciclo

### Ciclo Impacto



# 3º Ciclo

## Analisar o Author Impact



## 3º Ciclo

### Analisar o Author Impact by Total Citation

Plot    Table

Show 20 rows    Copy    CSV    Excel    PDF    Print    Search:

Author	h_index	g_index	m_index	TC	NP	PY_start
WANG Y	5	9	0.833	99	9	2016
MOHANS	3	7	0.429	81	7	2015
LONDHE PS	3	5	0.429	80	5	2015
PATRE BM	3	5	0.429	80	5	2015
WAGHMARE LM	3	5	0.429	80	5	2015
DOUAT LR	1	1	0.167	60	1	2016
MANHES MMM	1	1	0.167	60	1	2016
RAUSCHENBACH T	1	1	0.167	60	1	2016
SCHERER SA	1	1	0.167	60	1	2016
VOSS M	1	1	0.167	60	1	2016
CHEN B	3	5	0.600	57	5	2017
WU H	3	5	0.600	57	5	2017
COLEMAN J	1	1	0.250	41	1	2018
DODY G	1	1	0.250	41	1	2018
OMERDI E	1	1	0.250	41	1	2018
SIVEV S	1	1	0.250	41	1	2018
TOAL D	1	1	0.250	41	1	2018
KIM J	1	3	0.143	40	3	2015
SANTHAKUMAR M	2	2	0.286	40	2	2015

# 3º Ciclo

Selecionar os artigos dos cinco primeiros autores de maior impacto

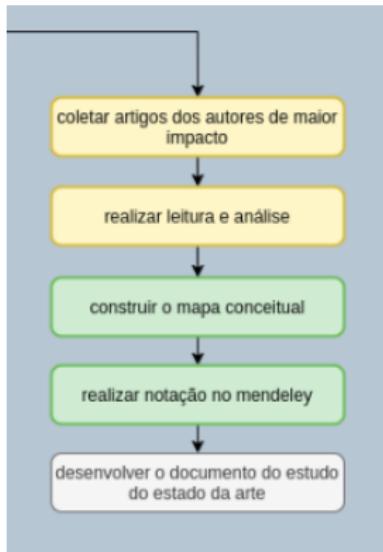
Welcome Data Filter Dataset Sources Authors Documents Coupling Conceptual Structure Intellectual Structure Social Structure Quit

Show 50 rows Print Search: MOHAN S

DOI	AU	DE	ID	C1	CR	J1	AB	AR	coden
<a href="#">10.1016/j.locomotora.2018.03.082</a>	PATRE BALODHIE PESWAGHMAIRE LMMOHAN	AUTONOMOUS UNDERWATER VEHICLE (AUV); FINITE-TIME CONTROL; FUZZY LOGIC; LYAPUNOV STABILITY; TERMINAL SLIDING MODE CONTROL	COMPUTER CIRCUITS; CONTROLLERS; DYNAMICS; MANIPULATORS; ROBUST CONTROL; SLIDING MODE CONTROL; TIME VARYING CONTROL SYSTEMS; UNCER	DEPARTMENT OF INSTRUMENTATION ENGINEERING, SHRI GURU GOBIND SINGH INSTITUTE OF ENGINEERING AND TECHNOLOGY, VISHNUPURI, NANDED, MAHARASHTRA, INDIA; D	ANTONELLI, G., ON THE USE OF ADAPTIVE/INTEGRAL ACTION FOR SIX DEGREES OF FREEDOM CONTROL OF AUTONOMOUS UNDERWATER VEHICLES (2007) IEE J. OCEAN. ENG.	OCEAN ENG.	IN THIS PAPER, A ROBUST FINITE TIME TRAJECTORY TRACKING CONTROL APPROACH IS PROPOSED FOR AUTONOMOUS UNDERWATER VEHICLE (AUV), WHICH BELONGS TO THE CLA	NA	NA
<a href="#">10.1109/OCEANSAP.2016.7485382</a>	MOHAN SSINGHY	DYNAMIC MODELLING; POSITION TRACKING CONTROL; REDUNDANCY; RESOLUTION; TILTING; THRUSTER; UNDERWATER VEHICLE	DEGREES OF FREEDOM (MECHANICS); DYNAMIC MODELS; MANIPULATORS; MECHANICS; NON-LINEAR; POSITION CONTROL; REDUNDANCY; TRACKING (POSITION); VEHICL	MECHANICAL ENGINEERING, IT INDORE, INDORE, INDIA	ANTONELLI, G., (2014) UNDERWATER ROBOTS: MOTION AND FORCE CONTROL OF VEHICLE MANIPULATOR SYSTEMS, SPRINGER TRACTS IN ADVANCED ROBOTICS, BERLIN, JIN,	OCEANS - SHANGHAI	UNDERWATER VEHICLES ARE USUALLY DESIGNED WITH ADDITIONAL DEGREES OF FREEDOM THAN THOSE REQUIRED TO ACCOMPLISH GIVEN MANIPULATOR TASKS, A ROBOT PLATFOR	7485382	NA

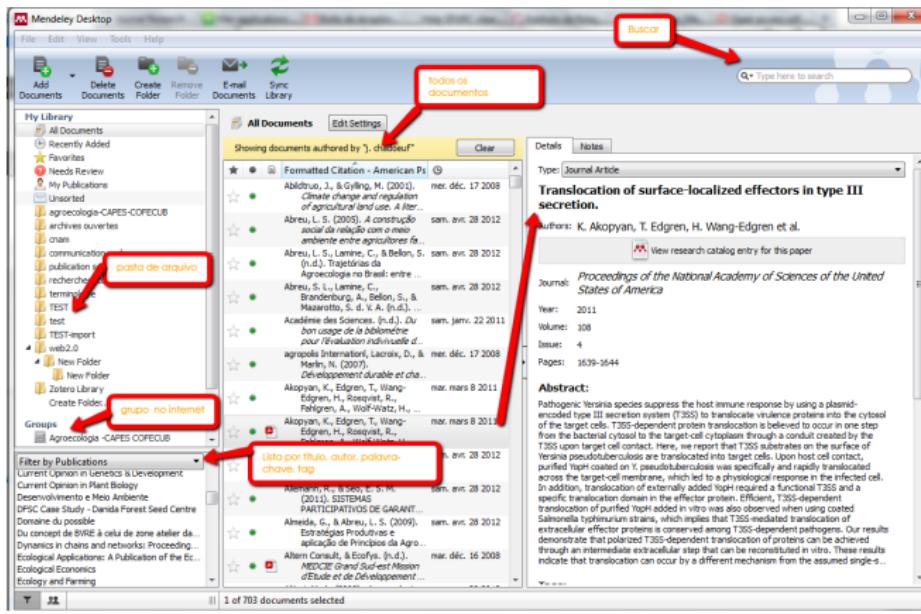
## 4º Ciclo

### Ciclo de Produção



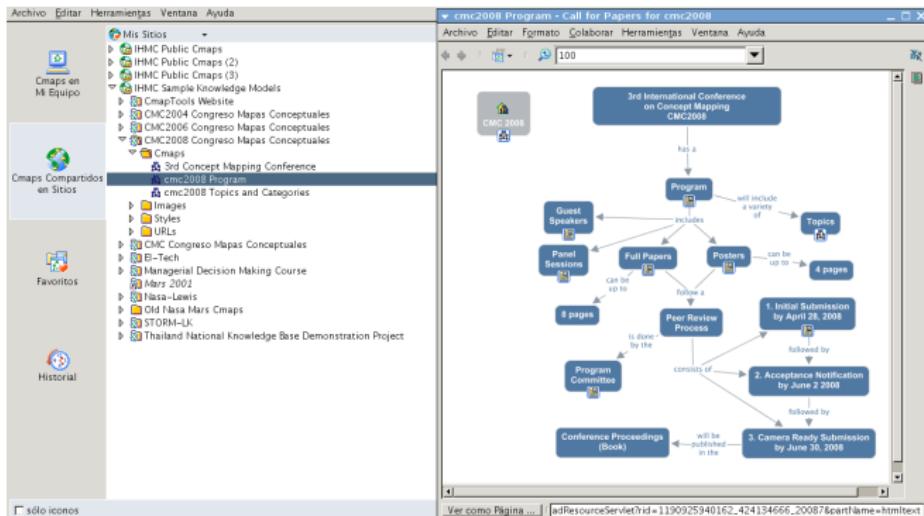
# Mendeley

Conhecido pelo gerenciador de referências, usado para gerenciar, compartilhar e criar referências bibliográficas para artigos acadêmicos.



# CmapTools

## Software de mapeamento de conceito



## Vamos à prática...

*"O que você sabe não tem valor algum, o valor está no que você faz com o que sabe." Bruce Lee*



# Dúvidas?

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marcoreis@fieb.org



<https://github.com/Brazilian-Institute-of-Robotics/bir-mini-method-bili>



