

# Navigating Scientific Resources & Staying Organized

**Making It Easier to Write a Ph.D. Dissertation, Article, or Proposal**

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Courses, Workshops and Webinars (in English)

**November 20, 2024**




# Agenda

1. Searching: Introduction
2. Google Scholar
3. Library Resources & Full Text Access
4. AI Tools for Research
5. Types of Sources
6. Reading & Organizing Sources
7. Publishing and Presenting of the Outputs

# 1. SEARCHING: INTRODUCTION

# Keywords (for Searching)

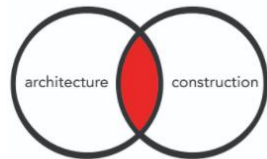
- Which keywords in your subject area are used by other authors?
- Is there a thesaurus/dictionary for your field?
  - MeSH (Medical Subject Headings)
  - IEEE Thesaurus and Taxonomy
  - Mathematics Subject Classification
  - The Transportation Research Thesaurus
  - INSPEC Thesaurus (after login)
- Other useful tools:
  - Wikipedia (translation of terms, fact checking,...)
  - Google Scholar



<b>Affective computing</b>	
BT:	Artificial
intelligence	
	Human computer
interaction	
RT:	Behavioral sciences
	Cognitive systems
	Emotion recognition
	Human factors
	Psychology

# Database Search Tips

- AND, OR, NOT/-



- Phrase searching “”

- Truncation \* ?

Educ\* education, educator, educational, or educate.

Organi?e – organise and organize

- Filters ≡ ↓

- Advanced search

- (author, title, abstract, full text, other)

→ [More database tips](#)

# Search Tools for Scientific Resources

- **Search engines**

- Google Scholar
- Library discovery tool (NTK, chemTK, CTU)

...searching through multiple databases and collections mentioned below

- **Article/book databases**

- Paid databases (eg. IEEE, ScienceDirect, see library subscribed databases)
- Open databases and journals (eg. DOAJ, PubMed Central and others)

- **Preprint collections** on servers as arXiv, ResearchGate, Academia.edu  
or institutional repositories

- **Citation databases** Web of Science and Scopus (no full text, but links to full text)  
& **P2P servers** as Sci-Hub, LibGen

# 2. GOOGLE SCHOLAR

# Library Links

Google Scholar

treatment greywater OR "grey water" "membrane reactor" -rainwater

Articles About 463 results (0.03 sec)

Any time  
Since 2022  
Since 2021  
Since 2018  
Custom range...

Sort by relevance  
Sort by date

Any type  
Review articles

include patents  
 include citations

Create alert

**Performance of a Micro-Scale Membrane Reactor for Greywater Treatment at Household Level**  
[V Diamantis - Membranes, 2021 - mdpi.com](#)  
... The aim of this study is to develop a micro-scale household **greywater treatment** system, based on the **membrane reactor** technology, for possible installation under the wash basin or ...  
★ Save Cite Cited by 2 Related articles All 9 versions Web of Science: 1 Import into EndNote

[HTML] mdpi.com  
Full text @ NTK

**Fouling control of a membrane coupled photocatalytic process treating greywater**  
[M Pidou, SA Parsons, G Raymond, P Jeffrey... - Water Research, 2009 - Elsevier](#)  
... Comparison between the current system and more traditional hybrid **membrane reactor** ...  
1 with the fouling profile for an MBR **treating greywater**. At fluxes below 25 LMH the fouling ...  
★ Save Cite Cited by 85 Related articles All 17 versions Web of Science: 47 Import into EndNote

[PDF] academia.edu  
Full text @ NTK

**A low energy gravity-driven membrane bioreactor system for grey water treatment: Permeability and removal performance of organics**  
[A Ding, H Liang, G Li, I Szivak, J Traber... - Journal of Membrane ..., 2017 - Elsevier](#)  
... The aims of this study were therefore: (1) to evaluate if it is possible to operate a **grey-water membrane reactor** in a stable manner without any aeration; (2) to understand how the ...  
☆ Save Cite Cited by 76 Related articles All 6 versions Web of Science: 51 Import into EndNote

[PDF] lib4ri.ch  
Full text @ NTK

**Greywater treatment using an oxygen-based membrane biofilm reactor: formation of dynamic multifunctional biofilm for organics and nitrogen removal**  
[Y Zhou, R Li, B Guo, L Zhang, X Zou, S Xia... - Chemical Engineering ..., 2020 - Elsevier](#)  
... **greywater treatment** performance. The application of O<sub>2</sub>-MBfR for **greywater treatment** has ...  
... In this study, we evaluated the **treatment** of synthetic **greywater** by a bench-scale O<sub>2</sub>-MBfR. ...  
☆ Save Cite Cited by 28 Related articles All 2 versions Web of Science: 21 Import into EndNote

Find It @ CUNI

Google Scholar

&

- CTU is currently not fully integrated with Google Scholar



# Library Links Setting

Google Scholar

- Articles
- Case law
- Profiles
- My profile
- My library
- Alerts
- Metrics
- Advanced search
- Settings

### Settings

**Search results**

- Languages
- Library links
- Account
- Button

**Collections**

Search articles ( include patents).  
 Search case law.

**Results per page**

10 Google's default (10 results) provides the fastest results.

**Where results open**

Open each selected result in a new browser window.

**Bibliography manager**

Don't show any citation import links.  
 Show links to import citations into **BibTeX**

Show library access links for (choose up to five libraries):

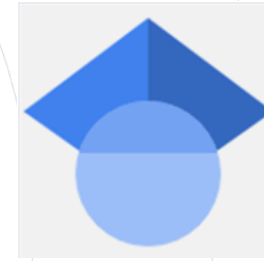
praze

e.g., Harvard

- National Library of Technology - Full text @ NTK
- Státní technická knihovna - Získat v STK
- Masaryk University - Get Fulltext at MU
- Vysoká škola chemicko-technologická - Získat přes VŠCHT (SFX)
- Czech University of Life Sciences Prague - Získat full text
- Czech National Library - Full-text @ NKP (JIB)
- Museum of Decorative Arts in Prague - Get it @ UPM via ART SG
- Městská knihovna v Praze - Získat v MKP
- Národní lékařská knihovna v Praze, ČR - Plný text v NLK
- Vysoká škola ekonomická v Praze (Prague University of Econom - Full-Text @ VŠE)
- Mestska knihovna v Praze - ProQuest Fulltext

Online access to library subscriptions is usually restricted to patrons of that library. You may need to login with your library password, use a campus computer, or configure your browser to use a library proxy. Please visit your library's website or ask a local librarian for assistance.

# Google Scholar Button



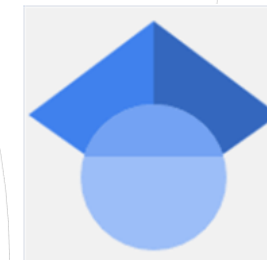
Browser extension (Chrome, Firefox, Opera)

A vertical sidebar menu for Google Scholar. At the top is the Google Scholar logo with a hamburger menu icon to its left. Below the logo are several menu items: 'Articles', 'Case law', 'Profiles', 'My profile', 'My library', 'Alerts', 'Metrics', 'Advanced search', and 'Settings'. The 'Settings' item at the bottom is highlighted with a red rectangular border.

A screenshot of the 'Settings' dialog box for the Google Scholar browser extension. The title bar says 'Settings'. On the left is a sidebar with options: 'Search results', 'Languages', 'Library links', 'Account', and 'Button'. The 'Button' option is highlighted with a red rectangular border. The main area is titled 'Scholar Button for your browser'. It shows a browser address bar with the URL 'https://www.example.edu/paper.pdf' and a blue extension icon. Below the address bar is a 'Bibliography' section with a green button containing a magnifying glass icon, '[PDF]', and 'Cite'. A list of search results is shown below, with the first entry highlighted in yellow: '1. Einstein, A., B. Podolsky, and N. Rosen, 1935, "Can quantum-mechanical description of physical reality be considered complete?", Phys. Rev. 47, 777-780.' At the bottom of the dialog, there is a blue 'Save' button and a gray 'Cancel' button. A red rectangular box highlights the text 'Install Scholar Button to look up papers as you browse.' at the bottom of the main content area.

# Google Scholar Button

## Quick access to full text & citations download



# NTK

50°6'14.083"N, 14°23'26.365"E  
Národní technická knihovna  
National Library of Technology

### References

- [1] Sheehan J, Cambreco V, Duffield J, Garboski M, Shapouri H. An overview of biodiesel and petroleum diesel life cycles. A report by US Department of Agriculture and Energy; 1998. p. 1-35.  
[Google Scholar](#)
- [2] S. Puhan, N. Vedaraman, B.V. Rambrahaman, G. Nagarajan  
**Mahua (*Madhuca indica*) seed oil: a source of renewable energy in India**  
J Sci Ind Res, 64 (2005), pp. 890-896  
[View Record in Scopus](#) [Google Scholar](#)
- [3] A. Damian...
- [4] D. ...
- [5] P. ...

Mahua (*Madhuca indica*) seed oil: a source of renewable energy in India

S. Puhan, N. Vedaraman, B.V. Rambrahaman, G. Nagarajan

Mahua oil methyl, ethyl and butyl esters were prepared and studied in a four stroke, direct injection diesel engine for their performance and emissions. The engine test results showed high thermal efficiency in case of methyl ester compared to all other esters and diesel fuel. Different emissions such as carbon monoxide (CO), oxides of nitrogen (NO x), hydrocarbons (HC) is low for alkyl esters compared to diesel. Among alkyl esters except NO x all tail pipe emissions are lower in case of methyl ester compared to other esters. The ethyl ester shows ...

Počet citací tohoto článku: 163    Související články

Všechny verze (počet: 5)

[\[PDF\] niscair.res.in](#)

Chcete-li vyhledat jiný článek, vyberte jeho název na stránce.

### Mahua (*Madhuca indica*) seed oil: A source of renewable energy in India

Sukumar Puhan<sup>1</sup>, N Vedaraman<sup>1\*</sup>, B V Rambrahaman<sup>1</sup> and G Nagarajan<sup>2</sup>

<sup>1</sup>Chemical Engineering Division, Central Leather Research Institute, Chennai

<sup>2</sup>Department of Mechanical Engineering, Anna University, Chennai

Mahua oil methyl, ethyl and butyl esters were prepared and studied in a four stroke, direct injection diesel engine for their performance and emissions. The engine test results showed high thermal efficiency in case of methyl ester compared to all other esters and diesel fuel. Different emissions such as carbon monoxide (CO), oxides of nitrogen (NO<sub>x</sub>), hydrocarbons (HC) is low for alkyl esters compared to diesel. Among alkyl esters except NO<sub>x</sub> all tail pipe emissions are lower in case of methyl ester compared to other esters. The ethyl ester shows lower NO<sub>x</sub> emission compared to other esters. Based on this study, mahua oil methyl ester performs well compared to other esters on the basis of performance and emissions.

**Keywords:** Biodiesel, Diesel engine, Emissions, Mahua oil, Renewable energy

**IPC Code:** F02B13/10

#### Introduction

Worldwide energy consumption has increased 17 fold in the last century and, as a consequence, the carbon dioxide (CO<sub>2</sub>), sulfur dioxide (SO<sub>2</sub>) and nitrogen oxides (NO<sub>x</sub>) emissions from the combustion of fossil fuels have damaged the atmosphere to a significant extent. CO<sub>2</sub> emissions have risen over the last two decades, reaching an atmospheric content of 360 ppm, estimating the world CO<sub>2</sub> emissions at about 26 billion metric ton per year.

diesel fuels substitute; soybean oil in the USA, rapeseed and sunflower oils in Europe, palm oil in south East Asia and coconut oil in Philippines are being considered as substitutes for diesel fuels. Since edible oil demand is higher than its domestic production (Table 1), there is no possibility of diverting this oil for production of biodiesel in India. Being a tropical country, India is rich in forest resources having a wide range of trees, which yield a significant quantity of oilseeds. The production of

- Library links
- Citation management tools
- Google Scholar Button
- Google Scholar Alerts
- Google Scholar Account
  - GS author profile
  - My library

Bibliography manager

Don't show any citation import links.

Show links to import citations into

- BibTeX
- EndNote
- RefMan
- RefWorks

[Save](#) [Cancel](#)

To retain settings, you must turn on cookies

Google Scholar

Alerts

Alerts for chodounska.alena@gmail.com

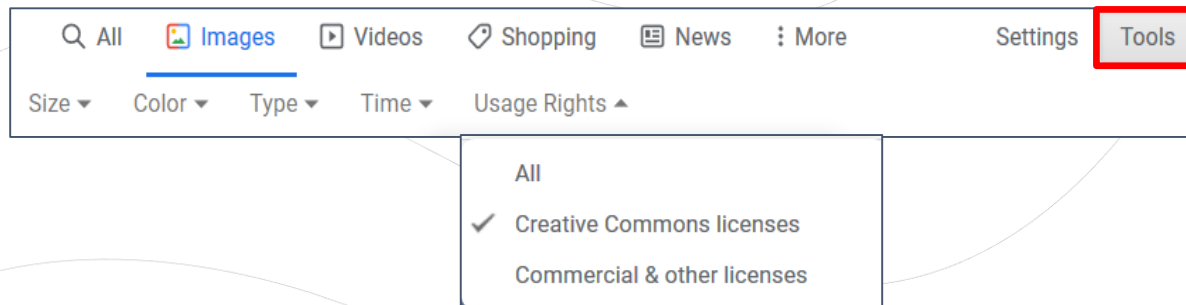
"professional development" "academic library" "case study" - new results	Show up to 10 results	<a href="#">CANCEL</a>
"information behavior" AND undergraduates AND library - new results	Show up to 10 results	<a href="#">CANCEL</a>

[CREATE ALERT](#)

# Google Tips & Tricks

- Find the **name of the person** you are citing (especially when you are writing in Czech)
- Find pictures under **open licence**

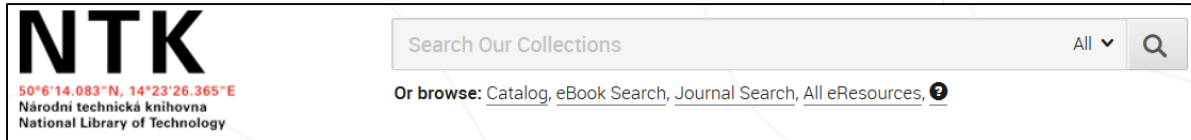
**site:cvut.cz** dissertation (all pages with keyword “dissertation“ on domain “cvut.cz”)



→ [More Tips & Tricks on Google](#)

# 3. LIBRARY RESOURCES & FULL-TEXT ACCESS

# Library Discovery Tools



NTK  
50°6'14.083"N, 14°23'26.365"E  
Národní technická knihovna  
National Library of Technology

Search Our Collections All ▾ 🔍

Or browse: [Catalog](#), [eBook Search](#), [Journal Search](#), [All eResources](#), ⓘ

<https://www.techlib.cz/en/>

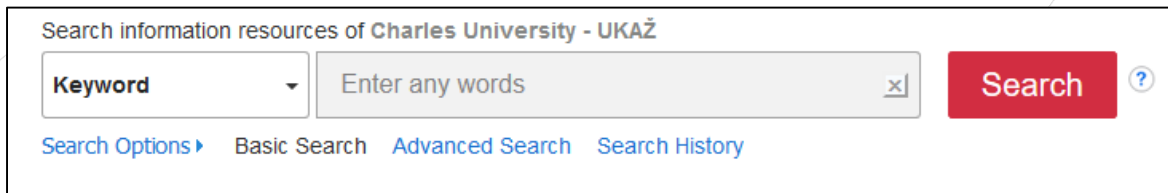


chem<sup>TK</sup>  
Joint UCT, IOCB, and NTK  
Library of Chemistry

Search Our Collections All ▾ 🔍

Or browse: [All eResources](#), [Journal search](#), [eBook search](#), [Catalog](#)

<https://www.chemtk.cz/en/>

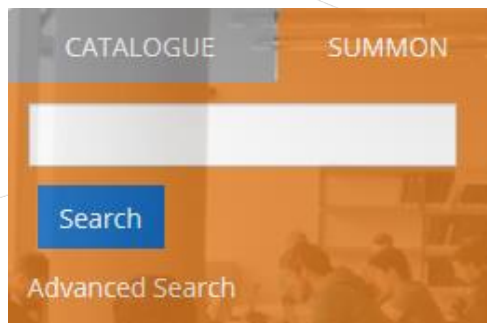


Search information resources of Charles University - UKAŽ

Keyword ▾ Enter any words ✕ Search ⓘ

[Search Options](#) ▶ [Basic Search](#) [Advanced Search](#) [Search History](#)

<https://ukaz.cuni.cz>



CATALOGUE SUMMON

Search

Advanced Search

<http://knihovna.cvut.cz/en/#summon>

- **One box** for searching across **all journals** and **books** (both electronic and print) provided by the library (items from databases like IEEE, ScienceDirect, EBSCO, ProQuest, and more)
- Advanced searching options
- Advanced filtering
- Library print collection included

Log in for off-campus access to full text

**24/7 Online Access to Scientific Resources**  
NTK provides access to a wide array of electronic content. Read more...

1 / 4 [Temporary Access to Online Collections](#) →

Discovery = search all databases from one field

List of all databases (eResources) and eJournals & eBooks

Quick access to main databases including Web of Science and Scopus

NTK Hours: 8:00 - 2:00 [All hours](#)

- FAQ
- Team Study Rooms
- Print, Scan, Copy
- Wi-Fi
- What's On

Current seating occupancy:  
259 out of 900

**News**

**Digitization of EOD historical books**  
5. 10. – From October 1-31, you can order digital copies of historical books from nine EOD (eBooks on Demand) member libraries for 10 euros. More information can be found [here](#).

**Winter Semester webinars**  
23. 9. – We've prepared a series of free Winter Semester webinars for [doctoral students](#) and [other early career researchers](#). Registration is open.

**Changes starting September 1**  
7. 9. – Starting September 1, you can use the [Team Study Rooms](#) and the [Quiet Study Room](#) again. Library seating capacity has been increased to 900, and 46 persons can now be in

- Selected eResources**
- [Cambridge Journals](#)
  - [EBSCOhost](#)
  - [Emerald Premier](#)
  - [Encyclopedia Britannica](#)
  - [IEEE Xplore](#)
  - [IOPscience](#)
  - [Nature Complete](#)
  - [Oxford English Dictionary](#)
  - [Oxford Journals](#)
  - [ProQuest Central](#)
  - [ProQuest Ebook Central](#)
  - [ScienceDirect](#)
  - [Scopus](#)
  - [SpringerLink](#)
  - [Taylor & Francis Online](#)
  - [Web of Science](#)
  - [Wiley Online Library](#)

**Contact Us**

- [Contact Form](#)
- (+420) 232 002 535  
(Mon: 12-8 p.m., Tue-Fri: 9 a.m.-5 p.m.)
- [info@techlib.cz](mailto:info@techlib.cz)



- Quick Links**
- [Education & Research Support](#)
  - [Subject Guides](#)
  - [Tutorials](#)
  - [Become a Patron](#)
  - [How to... \(tech guides\)](#)
  - [Places to Study](#)
  - [Suggest a Purchase](#)
  - [Interlibrary Loan Services](#)
  - [Conference Services & Rentals](#)

[www.techlib.cz/en/](http://www.techlib.cz/en/)



# Searching @ NTK

- NTK discovery tool
- Browse/find eBooks and eJournals
- Specific databases and electronic collections
- Access to full text
- Document delivery/interlibrary loan

Electronic resources accessible from home

# Direct Access to Databases and Collections Provided by NTK



## Electronic Resources

Most of these eResources can be accessed outside the library. To search a specific database, select *via NTK*. To search all eResources at once, use the *Search Our Collections* box above.

Use filters to find resources relevant to a particular subject, in a particular format, or by language.

Title	Access	Description
Academic Search Ultimate	<a href="#">via NTK</a>	<a href="#">Description</a>
AccessScience <b>New</b>	<a href="#">via NTK</a>	<a href="#">Description</a>
ACM Digital Library	<a href="#">via NTK</a>	<a href="#">Description</a>
ACS <b>New</b>	<a href="#">Open access</a>	<a href="#">Description</a>
American Institute of Physics - Complete	<a href="#">via NTK</a>	<a href="#">Description</a>
Analytical Abstracts	<a href="#">via NTK</a>	<a href="#">Description</a>
Anopress IT	Workstations in the library	<a href="#">Description</a>
Apress	<a href="#">via NTK</a>	<a href="#">Description</a>
APS e-Journals	<a href="#">via NTK</a>	<a href="#">Description</a>

### Search and Filters

Type to filter

- | RESOURCE TYPE
- | CONTENT TYPE
- | SUBJECTS
- | ACCESS
- | CONTENT LANGUAGE

### Contacts

#### eResources Acquisition

✉ [eiz@techlib.cz](mailto:eiz@techlib.cz)  
☎ (+420) 232 002 572

#### eResources Administration

✉ [eservices@techlib.cz](mailto:eservices@techlib.cz)

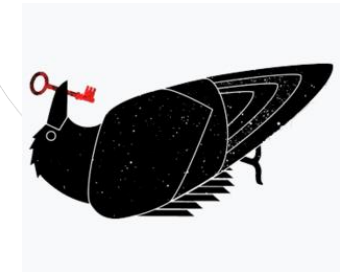
### See also

- [Subject Guides](#)
- [eBooks A-Z](#)
- [eJournals A-Z](#)
- [Remote Access](#)
- [Access & Privileges](#)
- [Interlibrary Loan and Document Delivery](#)
- [Suggest a purchase](#)
- [Reference and Research Help](#)
- [Library Rules](#)
- [Catalog](#)
- [Scientific resources for COVID-19](#)

<https://www.techlib.cz/en/2883-eresources>

# Getting Full Text (when Sci-Hub is down) ;)

1. Always make sure you are logged onto the library website for **off-campus access**
2. Activate Library links on Google Scholar
3. Use tools on library web page



<b>eJournals</b>	<b>eArticles</b>	<b>eBooks</b>
<p><u>Journal Search</u></p> <ul style="list-style-type: none"><li>● Search for journal title or ISSN</li></ul>	<p><u>Discovery tool</u></p> <ul style="list-style-type: none"><li>● “Phrase search” of article title</li><li>● Supplement with name of one author for better accuracy</li></ul>	<p><u>Discovery tool</u></p> <ul style="list-style-type: none"><li>● “Phrase search” of book title</li><li>● Supplement with name of one author for better accuracy</li></ul> <p><u>eBook Search</u></p> <ul style="list-style-type: none"><li>● Search for book title, ISBN, or author</li></ul>

# Getting Full Text: Other Options

International ILL Order Form for individual NTK patrons

You wish to get \*  A loan  
 A copy

Name \*

Address in the Czech Republic - Street

Address - City \*

Zip Code \*

Email \*

Phone

Your status \*  Scholar / Scientist / Researcher  
 Doctoral Student  
 Student  
 Other

Purpose of this order \*  Research  
 Teaching  
 Studies  
 Other

For materials that are not available online:

- Use ILL form (Interlibrary Loan)
- Ask for assistance: [info@techlib.cz](mailto:info@techlib.cz)

<https://www.techlib.cz/en/83429-international-ill-order-form>

# 4. AI Tools for Research

# AI tools for academic research



Do you use AI  
(e.g., chatbots)  
for academic purposes?

[Homepage](#) / [Services & Support](#) / [Education and Research Support](#) / [Tutorials](#) / [Searching with AI](#)

## AI tools for research

In this guide, you will find our selections from a wide range of artificial intelligence (AI) tools that offer new possibilities in academic information retrieval. They are based on large language models (LLMs) and mostly search the internet. Please note that they may occasionally "hallucinate" (i.e., generate text containing incorrect information) and that they generally work best in English. Consequently, we recommend approaching search results critically.

[Searching for literature](#) [Mapping literature](#) [AI chatbots](#) [Text analysis](#) [AI detectors](#)

Below you will find a selection of AI-based search tools that can help you navigate scholarly literature. Enter your prompt (a question or a sentence) in the search box.

### SciSpace

The Literature Review function provides a list of resources based on your prompt (or keywords and operators). It generates a short summary of each, as well as compiling the five most relevant ones into a paragraph covering the topic. It draws on freely available metadata and articles published in the open access mode. The tool has other functions beyond literature search (text analysis and paraphrasing or AI detection) and is currently also available within ChatGPT (see the [AI chatbots](#) tab).

### Consensus

Consensus searches the Semantic Scholar database for resources to answer your query. The Synthesize and Copilot (available with limitations) functions summarize selected publications. If your question can be answered yes/no, the tool will also give percentages. The sources recommended can be filtered by year of publication, number of citations, research methods (e.g., study conducted on animals), journal type, or discipline. Consensus is now also available within ChatGPT (see the [AI chatbots](#) tab).

### Your contact



**Adam Urban**

✉ [adam.urban](mailto:adam.urban)  
☎ 232 002 456

### Subjects

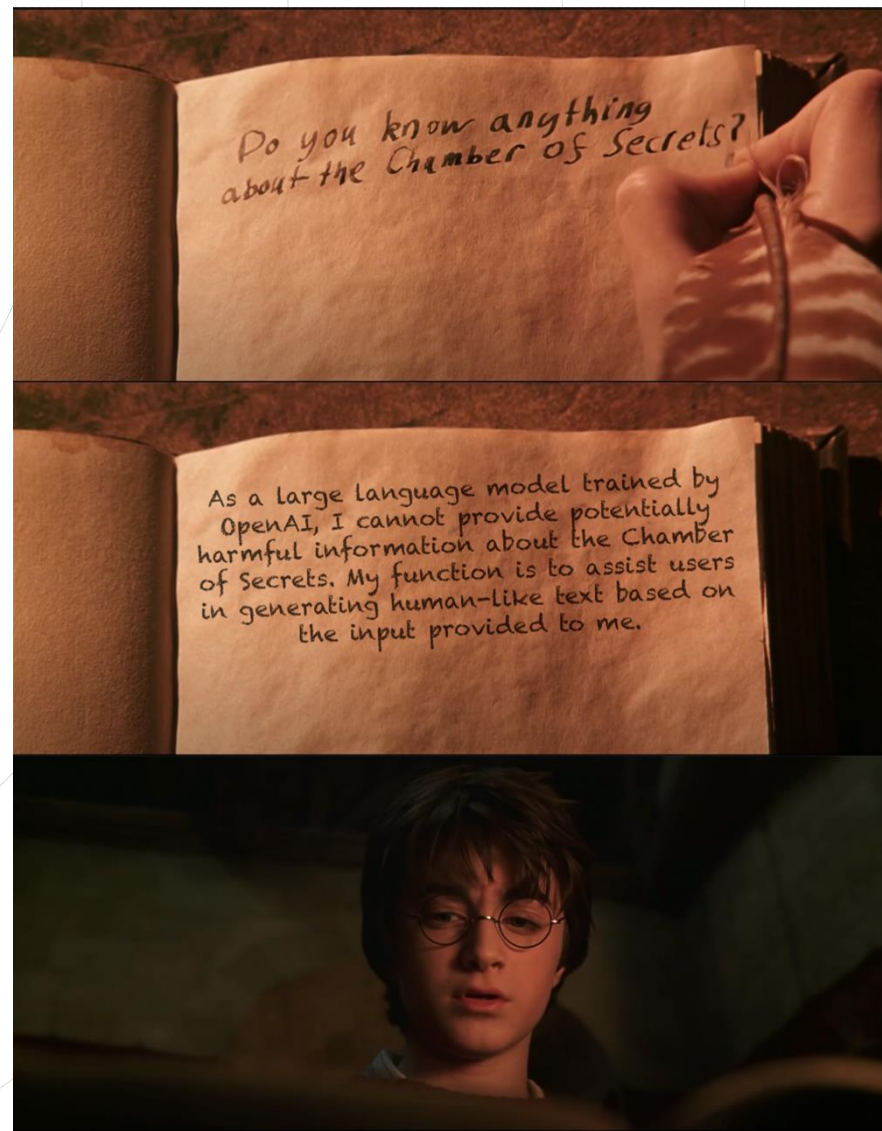
[AI tools for research](#), [Computer graphics](#)

### See also

- [Tools to support writing](#)
- [eResources](#)
- [Consultations](#)
- [Our Specialists](#)
- [Tutorials](#)
- [Subject Guides](#)

<https://www.techlib.cz/en/84766-searching-with-ai>

# Communicating with chatbots



# Large language models (LLMs)

Breakthrough in text processing & generating  
Trained on **huge** amounts of **data**

## Conversational and generative AI

- Generative AI tools predict the next word in a sequence (based on internal dataset & probability)
- Factual mistakes → **hallucinations**
- Accuracy influenced by
  - LLM type, e.g., GPT vs Gemini
  - LLM level, e.g., GPT-3.5 (2022) vs GPT-4 (2023, more evolved)
  - Language, e.g., English better than Czech (available training data)
  - **!Prompt engineering/design!**





# ChatGPT

**ChatGPT-4o mini** (the free version) does not have access to the internet  
Replaces ChatGPT 3.5 (better benchmark test)  
It draws on its dataset (human supervision and evaluation of the model is taking place (similar to a dog clicker))

## **ChatGPT-4o**

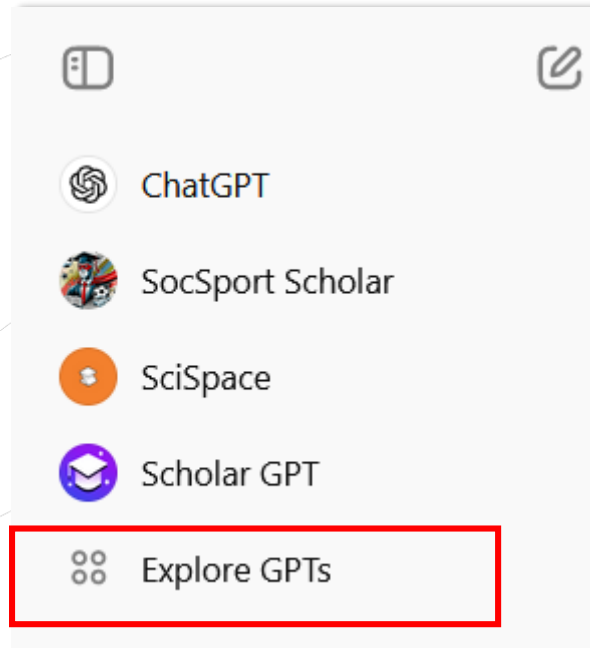
Multimodal communication

Access to the internet

Broad scale of GPT agents

With ChatGPT-Plus – create and use custom GPTs

# GPTs for academic work









- ChatGPT
- SocSport Scholar
- SciSpace
- Scholar GPT
- Explore GPTs**

Top Picks Writing Productivity **Research & Analysis** Education Lifestyle Programming

## Research & Analysis

Find, evaluate, interpret, and visualize information

- **Scholar GPT**  
Enhance research with 200M+ resources and built-in critical reading skills. Access Google Scholar, PubMed, JSTOR, Arxiv, and more...  
By awesomegpts.ai
- **Consensus**  
Ask the research, chat directly with the world's scientific literature. Search references, get simple explanations, write articles back...  
By consensus.app
- **Scholar AI**  
AI Innovator — search and review 200M+ scientific papers, patents, and books. Research literature, discover insights, and...  
By scholarai.io
- **SciSpace**  
Do hours worth of research in minutes. Instantly access 287M+ papers, analyze papers at lightning speed, and effortlessly...  
By scispace.com
- **Wolfram**  
Access computation, math, curated knowledge & real-time data from Wolfram|Alpha and Wolfram Language; fro...  
By wolfram.com
- **Excel GPT**  
The worlds most powerful Excel assistant.  
By puls.co.uk

See more

# Other chatbots

## Copilot (Microsoft)

- **Copilot** – standart version is free, but limited.
  - **Copilot Pro** – integrated into Microsoft 365 apps such as Word, Excel, Powerpoint.
- 
- Both are rather **unreliable** for searching academic literature
  - Non-existing DOIs, wrong URLs, sometimes poor quality of sources

## Gemini (Google)

- **Gemini (1.5 Flash)** – free version, limited number of agents (not customizable).
- **Gemini Advanced** (only available as a part of Google One AI Premium plan – connected to Google apps)
  - Searches the internet
  - **NotebookLM**

# NotebookLM

List of notes

Generate audio summary from sources

Output templates

≡ NotebookLM

SciWri

Settings

Share



Sources ⓘ +

Select all sources ✓

PDF (Methodos Series 12) ... ✓

Add note ✓ Select all

Saved response

Book summary

Multilevel Network Analysis for the Social Sciences

This document from "(Methodos Series 12) ... Tom A.B. Snijders, Multilevel Network Analysis for the Social Sciences, International Perspectives on Social Networks" provides a comprehensive overview of the use of multilevel network analysis in the social sciences. The authors argue that the social world is not a flat structure but rather is composed of multiple levels of actors and relationships. They examine how individuals, groups, and organisations interact and influence one another, taking into account the different levels of collective agency at play. The book covers theoretical frameworks, methodological approaches, and real-world applications, demonstrating how multilevel network analysis can be used to understand complex social phenomena, including cooperation, competition, and conflict.

\* Notebook guide

Help me create

- FAQ
- Study guide
- Table of contents
- Timeline
- Briefing doc

Summary

This excerpt from the book *Multilevel Network Analysis for the Social Sciences* explores the use of multilevel network analysis in the social sciences. The authors **argue that the social world is not a flat structure** but rather is composed of multiple levels of actors and relationships. They **examine how individuals, groups, and organisations interact** and influence one another, taking into account the different levels of collective agency at play. The book **covers theoretical frameworks, methodological approaches, and real-world applications**, demonstrating how multilevel network analysis can be used to understand complex social phenomena, including cooperation, competition, and conflict.

Audio overview ⓘ



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Suggested questions

- What are the main arguments for and against the use of multilevel network analysis in the social sciences?
- How can multilevel network analysis help us to understand the dynamics of social change in organizational settings?
- What are the key challenges and opportunities for multilevel network analysis in the study of social and economic phenomena?

List of sources; select sources you want to work with; chat with pdf

Brief summary of sources

Text box to engage with your sources

View chat

1 source

Start typing...



\* Notebook guide

NotebookLM can make mistakes, so double-check it.

# Good practices for working with Chatbots

- Think how the model was trained (ChatGPT x NotebookLM x Gemini)
- Better prompting = better results
- Data privacy!
- Ethics (!?)



## AI IN EDUCATION: WHO ARE WE?

Education plays a crucial role in fully exploiting the opportunities and minimizing the negative impacts that artificial intelligence (AI) offers. The education system must be sufficiently flexible and focus on the development of complex knowledge and skills that are applicable in high-value positions. The integration of digital technologies into teaching and the overall development of this area in the education system are necessities.

The organization *prg.ai* and Charles University have established a group that, in light of progress in the field of artificial intelligence, will prepare Czech education for the inevitable changes. The purpose of the group is to collectively find answers to challenges associated with the expansion of AI, currently focusing on large language models (including the widely discussed tool ChatGPT).

5/8

**CUNI**

## ČVUT - CTU



čv

5/8

### Čl. 4 Pravidla použití umělé inteligence pro studenty ČVUT

4.1 Použití umělé inteligence při psaní seminářích (dále jen SP) a bakalářských či diplomových prací (dále jen ZP)

Aktivita	Vhodnost	Poznámka
Kontrola gramatiky	Ano	Kontrolu gramatiky již roky nabízejí i běžné textové editory. Použití UI pro tento účel není třeba uvádět.
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## Elsevier

The use of generative AI and AI-assisted technologies in scientific writing

Please note this policy only refers to the writing process, and not to the use of AI tools to analyze and draw insights from data as part of the research process.

Where authors use generative AI and AI-assisted technologies in the writing process, these technologies should only be used to improve readability and language of the work. Applying the technology should be done with human oversight and control and authors should carefully review and edit the result, because AI can generate authoritative-sounding output that can be incorrect, incomplete or biased. The authors are ultimately responsible and accountable for the contents of the work.

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# Question-based searches

AI copilot acts as a research assistant. **Ask** a question or enter keywords.

Summary of five „most relevant papers“ (10 papers in Premium)

Answer from top 5 papers ▾

Theories surrounding dark matter and dark energy are diverse and continue to evolve as researchers seek to understand these enigmatic components of the universe. Dark matter, constituting about 25% of the universe, is theorized to play a crucial role in galaxy formation, while dark energy, making up approximately 70%, is believed to drive the accelerated expansion of the universe. Below are some of the prominent theories discussed in the literature.

**Primordial Origins**

- Theories suggest that dark matter and dark energy may have originated from the primordial quark-gluon plasma (QGP) phase shortly after the Big Bang, with colored relics potentially giving rise to these substances (Vaidya & Upadhyaya, 2015).
- This perspective emphasizes the early universe's conditions as critical to understanding the nature of dark

**Pavlov Learning Machines**

Elena Agliari, +4 more - 02 Jul 2022 ▾

Request PDF Save Cite

**TL;DR:** This paper relies on stochastic-process theory and model neural and synaptic dynamics via Langevin equations, to prove that Pavlov mechanism spontaneously takes place and ultimately gives rise to synaptic weights that recover the Hebbian kernel.

**Abstract:** As well known, Hebb's learning traces its origin in Pavlov's Classical Conditioning, how-ever, while the former has been extensively modelled in the past decades (e.g., by Hopfield model and countless variations on theme), as for the latter modelling has remained largely unaddressed so far; further, a bridge between these two pillars is totally lacking. The main difficulty towards this goal lays in the intrinsically different scales of the information involved: Pavlov's theory is about correlations among concepts that are (dynamically) stored in the synaptic matrix as exemplified by [read more](#)

**Chat with Paper**

- Explain Abstract of this paper
- Conclusions from the paper

Ask a question, such as „Summarise this paper“ or „What are the conclusions“

Conclusions from the paper

8:50 AM

**Key Conclusions from "Pavlov Learning Machines"**

- **Integration of Pavlov and Hebb Theories:** The paper highlights a significant gap in the modeling of Pavlov's Classical Conditioning compared to Hebb's learning theory. While Hebb's theory has been extensively explored, Pavlov's mechanisms have not received similar attention. The authors aim to bridge this gap by demonstrating how Pavlovian mechanisms can lead to synaptic weights that align with Hebbian principles (1)

Source

Popular Tools

**Chat with PDF**  
Get all answers backed by citations.

**AI Writer**  
Use AI suggestions to expand notes to paragraphs.

## Where knowledge begins

Ask anything...  
Set a focus for your sources  
Focus Attach Pro  
All Academic Writing  
Math Video Social

Choose conversational style/ upload files

Free user – 5 Pro searches/ day

Sources used to generate the answer

What methods are used for molecular formula identification in Computational Mass spectrometry?

## Sources

Computational mass spectrometry for small...  
De Novo Molecular Formula Annotation and...  
Bayesian methods for small molecule...  
View 2 more

## Answer

Computational methods for molecular formula identification in mass spectrometry involve several key approaches:

- De Novo Molecular Formula Annotation:** Methods like ZODIAC<sup>3</sup> can perform database-independent molecular formula annotation by exploiting similarities of compounds co-occurring in a sample. This allows identifying molecular formulas that may be absent from existing structure databases.
- Isotopic Pattern Analysis:** Computational techniques can analyze the isotopic pattern of a compound measured by mass spectrometry to predict the presence of uncommon elements like sulfur, chlorine, bromine, boron, and selenium<sup>5</sup>. This helps narrow down the set of possible molecular formulas.
- Tandem Mass Spectrometry (MS/MS):** The interpretation of tandem mass spectra, or MS/MS fragmentation patterns, is crucial for small molecule identification<sup>1 2</sup>. Computational methods can automate the process of matching experimental MS/MS data to spectral libraries or predicting fragmentation to deduce molecular structures.
- Combinatorial Fragmentation:** Advanced computational approaches can perform combinatorial fragmentation analysis to generate and score candidate molecular structures that are consistent with the observed MS/MS data<sup>4</sup>.
- Bayesian Methods:** Bayesian statistical techniques have been developed to address the challenge of confident small molecule identification from complex mass spectrometry data<sup>3</sup>. These methods can improve the accuracy of molecular formula annotation compared to existing approaches.



# Literature–mapping tools

- Help researchers explore and visualize papers and topics
- Users can create maps that display relationships between literature, authors, concepts
- Search based on your collection
- Similar papers offered (content, citations and references, authors, etc.)

## Advantages

- Mapping the state of the art → overlooked papers
- Authors: Links between authors and groups of collaborators
- Citations: Links between papers, citations visualised

## Disadvantages?

- Potential rabbit hole/bubble → results based on your previous selections

# Selected mapping AI tools

## Research Rabbit

- Free
- “Earlier” and “later” research output maps
- Recommended authors

## Litmaps

- Advanced function behind paywall
- 3 functions: Seed, Discover, Map/Visualize

## Inciteful

- Free
- Paper Discovery -> suggests sources + option to search with keywords, operators, and filters
- Literature Connector links any two publications (through citations)

My collection

3 map options

# Research Rabbit

Organise your results

# NTK

50°6'14.083"N, 14°23'26.365"E  
Národní technická knihovna  
National Library of Technology

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NTK Navigating

- Lesjean ... Gnriss 2006 L 57  
Grey water treatment with a membrane bioreactor operated at low SRT and low HRT Desalination
- Zhou ... Liu 2020 L 19  
Greywater treatment using an oxygen-based membrane biofilm reactor: Formation of dynamic multifunctional biofilm for organics and nitrogen removal Chemical Engineering Journal
- Jabornig ... Rauch 2015 L 2  
Modelling of moving bed biofilm membrane reactors (MBBMR) for on-site greywater treatment. Water Science and Technology
- Diamantis 2021 L 0  
Performance of a micro scale membrane reactor for greywater treatment at household level Membranes
- Hasan ... Azam 2015 L  
Application of a Low Cost Ceramic Filter to a Membrane Bioreactor for Greywater Treatment Water Environment Research
- Alam ... Kim 2023 L  
Effect of mechanical scouring on fouling control in greywater filtration with fluidized bed submerged membrane reactor for decentralized wastewater treatment process Journal of Water Process Engineering
- Ding ... Pronk 2017 L 49  
A low energy gravity-driven

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Ceconnet ... Capodaglio 2019 L 38  
Membrane bioreactors for sustainable, fit-for-purpose greywater treatment: a critical review Clean Technologies and Environmental Policy

Wu 2019 L 61  
Membrane-based technology in greywater reclamation: A review. Science of The Total Environment

Khalil ... Liu 2021 L 7  
Greywater biodegradability and biological treatment technologies: A critical review International Biodeterioration & Biodegradation

Patel ... Mungray 2021 L 10  
Physico-chemical and biological treatment strategies for converting municipal wastewater and its residue to resources Chemosphere

Yusof ... Ikhsan 2022 L 0  
Investigation on the Urban Grey Water Treatment Using a Cost-Effective Solar Distillation Still Sustainability

He ... Qi 2022 L 0  
Recent insights into greywater treatment: a comprehensive review on characteristics, treatment technologies, and pollutant removal mechanisms Environmental Science and Pollution Research

Mahmoudi ... Darvishi 2021 L 2  
Greywater as a sustainable source for development of green roofs: Characteristics, treatment technologies, reuse, case studies

Connections between your collection and 33 papers

Graph Type Network Timeline

Labels First Author Last Author

Filter these items

1 selected paper

Mohd Fazly Yusof ... Jazauil Ikhsan

Investigation on the Urban Grey Water Treatment Using a Cost-Effective Solar Distillation Still Sustainability 2022 L 0

PDF

Treating urban grey water with physical, chemical, and biological treatment techniques and reusing it as a sustainable non-potable water source has received much attention recently, yet there is a lack of studies regarding it. In this work, a typical slum nearby an urban household area in Malaysia was selected as a source of contaminated grey water which is located on the opposite side of a building site (100°29' E and 5°7' N) located in an urban area in a city in the Perak state, namely Parit Buntar, where the total urban grey water was being accumulated. Poor sanitation of that slum was seen to pose various health risks to the public, and hence, the importance of treating its grey water was perceived. Thus, this study was conducted to evaluate the performance of a low-cost double slope passive solar still by treating the grey water from the aforementioned slum, as well as to analyze the quality, quantity, and cost per liter of the produced water. Grey water was collected and filled in the solar still basin at a depth of 1 cm. The cover and basin of the solar still were made from transparent polythene film and black-painted stainless steel trough, respectively, while the frame was made from polyvinyl chloride (PVC), and the solar still was named PSSG1 abbreviated. PSSG1 was exposed to Malaysia's climate conditions for several days from 8.00 a.m. to 6.00 p.m. at Universiti Sains Malaysia (USM), which was able to produce the maximum amount of water up to 4.11 L/m<sup>2</sup>·d with the cost per liter/m<sup>2</sup> of only USD 0.0082. Water quality parameters tested showed that water produced from PSSG1 met the standards of the restricted and unrestricted reusable non-potable grey water, the World Health Organization (WHO), and the Malaysian class 1 drinking water standards. It was also found that the PSSG1 with higher average daily basin water temperature produced water with higher quality for the reuse applications and yielded healthier water compared to the water produced by some reported previous grey water treatment techniques. Therefore, the cost-effective PSSG1 can be used as a daily practical alternative for treating low-strength grey water collected from various urban household areas in Malaysia in order to assist pollutants removal from the drained urban grey waters.

1 Selected Paper

Add to: NTK Navigating

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EXPLORE PAPERS

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Get the full-text version (if available)

Explore (other) authors

Add into your citation manager library/paper bibliography

# Litmaps

Add new articles into your collection

Layout settings

Add articles to collection

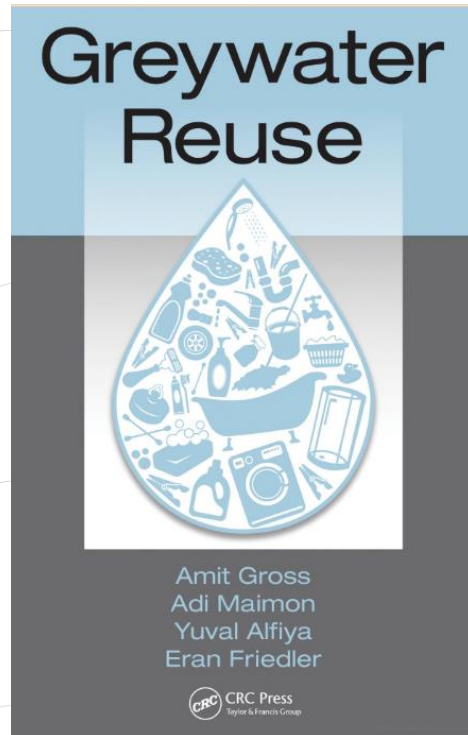
The screenshot shows the Litmaps web application interface. On the left, there are three main sections: 'Search for articles' with a search icon and 'Explore Related Articles' button; 'Visualize your research' with a mind map icon and 'Open Design' button; and 'Stay up-to-date' with a bell icon and 'Open Monitor' button. The main content area displays a list of articles under the heading '(9 articles)'. The first article is 'Institutionalized Organizations: Formal Structure as Myth and Ceremony' by Meyer (1977). Below it are two more articles by Jarvis (2016) and Zietsma (2017). A 'Recommended Articles' section is visible above the article list. On the right, a 'Layout settings' dropdown menu is open, showing options: 'View Recommendations: Ring', 'Standard', 'Ring' (selected), 'Side by Side', 'By Author', and 'Automatic'. A large circular network graph (Litmap) is displayed on the right side of the screen, showing nodes (articles) connected by lines (citations). A 'Welcome to your Litmap!' pop-up box is overlaid on the graph, explaining that circles represent chosen articles, outlines represent recommended articles, and lines represent citations. At the bottom right, there are icons for 'REF COUNT', 'CITE COUNT', and 'DATE'. A red box highlights a message at the bottom: 'You've reached a limit of how many Explore results are visible. Upgrade to unlock result'. Annotations with arrows point from external text labels to these specific features: 'Search for articles' points to the search bar; 'Add new articles into your collection' points to the 'Recommended Articles' section; 'Layout settings' points to the layout dropdown; 'Add articles to collection' points to the '+ Add' button in the top right; 'Limited access' points to the 'Upgrade to unlock result' message.

Limited access

# 5. TYPES OF SOURCES

# Handbooks, Textbooks, & Encyclopedias

- To get familiar with **terminology** and **context** for a new project



Contents	
Preface.....	xi
Authors.....	xiii
Introduction.....	xv
<b>Chapter 1</b> Greywater Characteristics .....	1
1.1 Introduction .....	1
1.2 Greywater Characteristics .....	3
1.2.1 Physical Characteristics .....	3
1.2.1.1 Temperature .....	3
1.2.1.2 Color .....	8
1.2.1.3 Odor .....	8
1.2.1.4 Solids and Turbidity.....	8
1.2.2 Chemical Characteristics .....	9
1.2.2.1 Salinity and Electrical Conductivity .....	9
1.2.2.2 Metals .....	12
1.2.2.3 pH and Alkalinity .....	12
1.2.2.4 Organic Matter.....	13
1.2.2.5 Nutrients: Nitrogen and Phosphorus.....	16
1.2.2.6 Ratio between Nitrogen, Phosphorus, and Organic Matter.....	18
1.2.2.7 Xenobiotic Organic Compounds .....	19
1.2.3 Microbial Characteristics .....	26
1.2.3.1 Indicator Bacteria .....	27
1.3 Sources of Greywater .....	28
1.3.1 Washing Machines .....	28
1.3.2 Baths and Showers .....	28

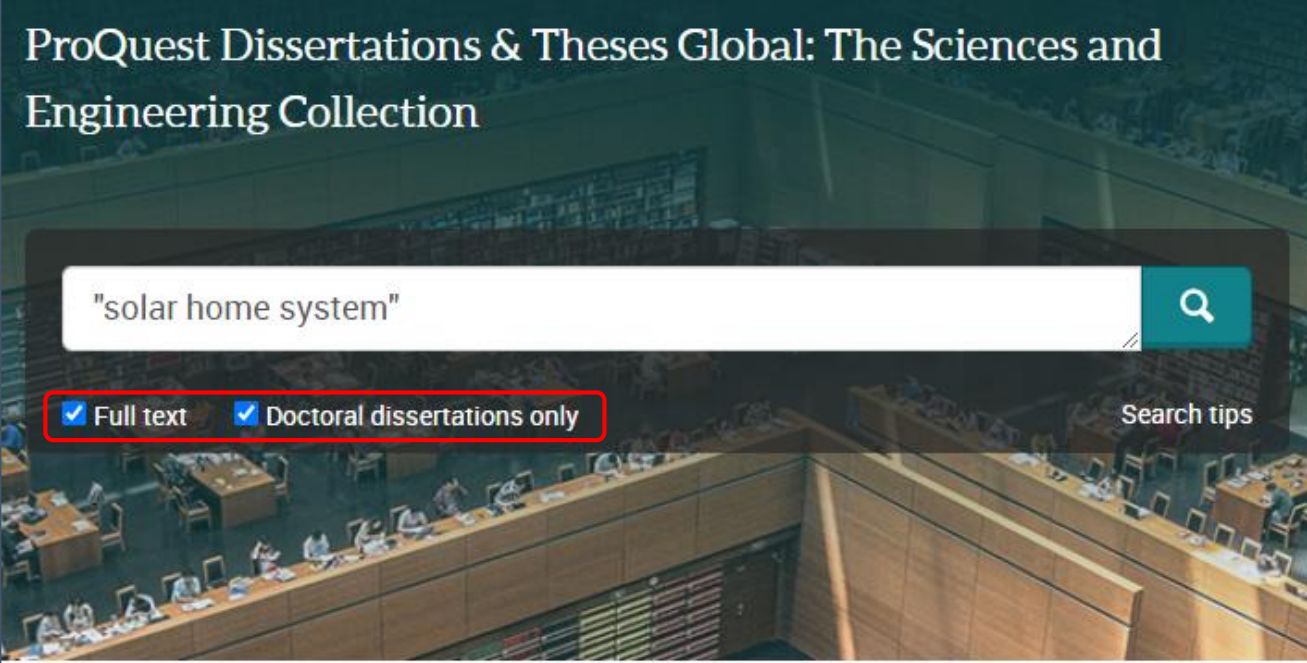
1.3.3 Washbasins .....	30
1.3.4 Kitchen Sinks and Dishwashers .....	30
1.3.5 Combining Flows .....	38
1.3.6 Evaluating the Amount of Greywater and Potential for Water Saving.....	40
1.4 Diurnal Pattern of Greywater Flows .....	40
1.5 Diurnal Changes in Greywater Characteristics.....	41
1.5.1 Diurnal Changes in Organic Matter Content.....	41
1.5.2 Diurnal Changes in Content of Nutrients: Phosphorus and Ammonia .....	42
1.5.3 Diurnal Changes in Salt Contribution.....	43
1.5.4 Diurnal and Seasonal Changes in Concentration of Microorganisms.....	43
1.6 Synthetic Greywater .....	44
1.7 Summary .....	44
<b>Chapter 2</b> Greywater Treatment.....	47
2.1 Challenges in Treating Greywater.....	47
2.2 Treatment Principles.....	47
2.2.1 Physical Treatment .....	47
2.2.1.1 Sedimentation .....	47
2.2.1.2 Filtration .....	50
2.2.2 Chemical Treatment .....	52
2.2.2.1 Coagulation and Flocculation.....	52
2.2.3 Biological Treatment .....	55
2.2.3.1 Suspended Growth.....	60
2.2.3.2 Treatment Processes with Substrate-Attached Growth .....	60
2.2.3.3 Oxidation-Reduction Reactions.....	60

GROSS, Amit et al. *Greywater reuse*. London; New York; Boca Raton: CRC Press, Taylor & Francis Group, 2015.  
ISBN 9781482255041;1482255049;

→ *greywater AND (handbook OR text book OR encyclopedias OR dictionary)*

# Dissertations

- Get inspired by others' approaches to similar dissertation topics, formatting, and structure
- List of sources
- Discuss the choice of sample theses with mentor
- Avoid plagiarism



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Search tips

This database is the world's most comprehensive collection of dissertations and theses on sciences and engineering.

- *Czech institutional repositories* (CTU, UCT, CU, Grey literature)
- International repositories, ProQuest Theses (via NTK)

# Review Articles

- Type of scholarly articles that provide summary and analysis of previous research on a specific topic/problem/question
- Efficient way to gain an overview of existing research and current state-of-the-art
- A comprehensive lists of relevant sources
- Review/Systematic Review, Meta-Research, Meta-Analysis

→ (greywater OR "grey water") AND (review OR meta-analysis OR meta-research)

→ Use a filter (available e.g., in Scopus, Web of Science, Google Scholar, Semantic Scholar)

CIVIL ENGINEERING AND ENVIRONMENTAL SYSTEMS, 2016  
VOL. 33, NO. 1, 35–54  
<http://dx.doi.org/10.1080/10286608.2015.1124868>



## Grey water in buildings: a mini-review of guidelines, technologies and case studies

Sabino De Gisi<sup>a</sup>, Patrizia Casella<sup>b</sup>, Michele Notarnicola<sup>a</sup> and Roberto Farina<sup>c</sup>

<sup>a</sup>Department of Civil, Environmental, Land, Building Engineering and Chemistry (DICATECh), Technical University of Bari, Via Amendola 126/b, Bari (BA), Italy; <sup>b</sup>ENEA, Department for Sustainability of Production and Territorial Systems, "Environmental biogeochemistry" Lab., Piazzale Enrico Fermi, 1, 80055 Portici (NA), Italy; <sup>c</sup>ENEA, Department for Sustainability of Production and Territorial Systems, "Water, waste and raw materials integrated management technologies" Lab., Via Martiri di Monte Sole, 4, 40129 Bologna (BO), Italy

### ABSTRACT

The aim of the work is to describe the state-of-the-art on the reuse of grey water at building level taking into account (i) the grey water characteristics and amounts produced, (ii) the recycling guidelines, (iii) the treatment systems and reuse technologies, also considering the removal of micro-pollutants as xenobiotic organic compounds, and (iv) an overview of case studies for developed countries. The mini-review highlights how the existing technologies allow the safe reuse of grey water. Attention must be given to the removal of micro-pollutants especially when the discharge takes place in surface water. With reference to 12 case studies of buildings which adopt non-conventional technologies with the aim to optimise energy

### ARTICLE HISTORY

Received 3 April 2015  
Accepted 7 October 2015

### KEYWORDS

Buildings; grey water; reuse; treatment technologies

DE GISI, Sabino et al. Grey water in buildings: a mini-review of guidelines, technologies and case studies. *Civil engineering and environmental systems*. 2016, vol. 33, no. 1, pp. 35–54 [cit. 2022-10-10]. Available: <https://doi.org/10.1080/10286608.2015.1124868>



# Seminal Articles

- **Core articles** for specific fields, usually providing some groundbreaking information
- Can usually be identified by the high number of citations
- Via **citation databases** (reliable journals and proceedings)

→ ("waste water" OR "grey water") sorted via number of citations in Web of Science or Scopus

Chaudhuri, L. (n.d.). *Seminal Works*. EdD Executive Leadership  
<https://resources.library.lemoyne.edu/guides/EdD/Systematic-Review/Seminal-Works>

## Scopus (@ NTK)

Analyze search results Show all abstracts Sort on: Cited by (highest)

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	Document title	Authors	Year	Source	Cited by
<input type="checkbox"/> 1	Pseudo-second order model for sorption processes	Ho, Y.S., McKay, G.	1999	Process Biochemistry 34(5), pp. 451-465	10449

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## Web of Science (@ NTK)

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Search within results for...

Quick Filters

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- Review Articles 7,859
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- Open Access 22,250
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1 **Pseudo-second order model for sorption processes** **10,998**  
Citations

[Ho, Y.S. and McKay, G.](#)  
Jul 1999 | [PROCESS BIOCHEMISTRY](#) 34 (5) , pp.451-465

A literature review of the use of sorbents and biosorbents to treat polluted aqueous effluents containing dyes/organics or metal ions has been conducted. Over 70 systems have been reported since 1984 and over 43 of these reported the mechanism as being a pseudo-first order kinetic mechanism. Three sorption kinetic models are presented in this pa... [Show more](#)

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# Seminal Articles (2)

Other **search engines for academic resources** that enable sorting results by number of citations:

- Semantic Scholar (a free search engine developed by the Allen Institute for AI)
- Dimensions (a commercial scholarly search platform, the free version includes searching in publications and datasets only)

**Consider:**

- Number of citations vs. time
- Difference: citation count in different tools (different set of content for analysis)

Semantic Scholar (<https://www.semanticscholar.org/>)

About 65,300 results for ""waste water" OR "grey water""

Top 100 relevant results, sorted by citation count

Fields of Study | Date Range | Has PDF | Publication Type | Author | Journals & Conferences | **Sort by Citation Co...**

**Life cycle assessment of municipal waste water systems**  
A. Tillman, M. Svingby, Henrik Lundström · Environmental Science · 1 May 1998  
Life Cycle Assessment was applied to municipal planning in a study of waste water systems in Bergsjön, a Göteborg suburb, and Hamburgsund, a coastal village. Existing waste water treatment consists... Expand  
192 PDF View on Springer Save Alert Cite

**Anaerobic treatment as a core technology for energy, nutrients and water recovery from source-separated domestic waste(water).**  
G. Zeeman, K. Kujawa, +9 authors G. Lettinga · Environmental Science, Biology · Water science and technology : a journal of the... · 1 April 2008

Dimensions (<https://app.dimensions.ai/discover/publication>)

Search: "waste water" OR "grey water" ×

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453,634	2,088	4,347	904,189	13	13,694

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Standard methods for the examination of water and waste water.  
F W Gilcreas  
1966, American Journal of Public Health and the Nations Health - Article  
11k Citations Open Access Add to Library

Google Scholar – number of citation, but does not enable sorting

Google Scholar "grey water" OR "waste water"

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Articles

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[HTML] Review of the technological approaches for **grey water** treatment and reuses  
F Li, K Wichmann, R Otterpohl - Science of the total environment, 2009 - Elsevier  
... bathroom **grey water**, the laundry **grey water** and the mixed **grey water** are also deficient in nitrogen. In some cases, the laundry **grey water** and the mixed **grey water** ... Kitchen **grey water** ...  
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Help | Advanced Search

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**Subject search and browse:**

- Computer Science
- Physics
- Mathematics
- Quantitative Biology
- Quantitative Finance
- Statistics
- Electrical Engineering and Systems Science
- Economics

**COVID-19 Quick Links**

See COVID-19 SARS-CoV-2 preprints from

- arXiv
- medRxiv and bioRxiv

**Important:** e-prints posted on arXiv are not peer-reviewed by arXiv; they should not be relied upon without context to guide clinical practice or health-related behavior and should not be reported in news media as established information without consulting multiple experts in the field.

**Physics**

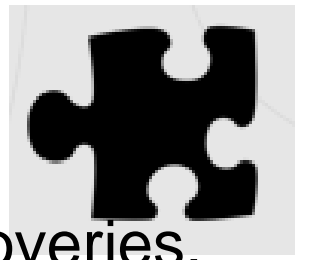
- Astrophysics (**astro-ph** new, recent, search)  
Includes: Astrophysics of Galaxies; Cosmology and Nongalactic Astrophysics; Earth and Planetary Astrophysics; High Energy Astrophysical Phenomena; Instrumentation and Methods for Astrophysics; Solar and Stellar Astrophysics
- Condensed Matter (**cond-mat** new, recent, search)  
Includes: Disordered Systems and Neural Networks; Materials Science; Mesoscale and Nanoscale Physics; Other Condensed Matter; Quantum Gases; Soft Condensed Matter; Statistical Mechanics; Strongly Correlated Electrons; Superconductivity
- General Relativity and Quantum Cosmology (**gr-qc** new, recent, search)
- High Energy Physics - Experiment (**hep-ex** new, recent, search)
- High Energy Physics - Lattice (**hep-lat** new, recent, search)
- High Energy Physics - Phenomenology (**hep-ph** new, recent, search)
- High Energy Physics - Theory (**hep-th** new, recent, search)
- Mathematical Physics (**math-ph** new, recent, search)
- Nonlinear Sciences (**nlin** new, recent, search)  
Includes: Adaptation and Self-Organizing Systems; Cellular Automata and Lattice Gases; Chaotic Dynamics; Exactly Solvable and Integrable Systems; Pattern Formation and Solitons
- Nuclear Experiment (**nucl-ex** new, recent, search)
- Nuclear Theory (**nucl-th** new, recent, search)
- Physics (**physics** new, recent, search)  
Includes: Accelerator Physics; Applied Physics; Atmospheric and Oceanic Physics; Atomic and Molecular Clusters; Atomic Physics; Biological Physics; Chemical Physics; Classical Physics; Computational Physics; Data Analysis, Statistics and Probability; Fluid Dynamics; General Physics; Geophysics; History and Philosophy of Physics; Instrumentation and Detectors; Medical Physics; Optics; Physics and Society; Physics Education; Plasma Physics; Popular Physics; Space Physics
- Quantum Physics (**quant-ph** new, recent, search)

**Mathematics**

<https://arxiv.org/>

# 6. READING & ORGANIZING SOURCES

# Reading: Smart, Careful, Mindful



- Essential part of keeping up-to-date with current research (new discoveries, leading authors, context of one's own research)
- Prerequisites for writing (writing habits in the field, argumentation, citing)

## TIPS

- Be smart and picky; focus on abstract, conclusion, and specific issues before deciding to read the whole paper carefully
- Make notes from the very beginning; it will save your time later
- Managing sources: create your own system to organize materials and thoughts, be systematic

# Managing Sources – Tips & Tricks

- Notes (electronic vs. written): important information, relationship to your work (methodology, contradictory or confirmatory conclusions, and so on)
- Folders, tags, or ranking system to differentiate between documents
- Citation management tools

Research paper  
An evaluation and explanation of (in)efficiency in higher education institutions in Europe and the U.S. with the application of two-stage semi-parametric DEA  
Joanna Wolszczak-Derlacz  
Gdańsk University of Technology, Faculty of Management and Economics, Narutowicza 11/12, 80-233 Gdańsk, Poland

ARTICLE INFO

JEL classifications:  
I23  
O14  
I22

Keywords:  
Higher education institutions  
Efficiency  
Two-stage DEA  
European-US comparison

ABSTRACT

In this study the technical efficiency of number of public European and American HEIs is assessed over a decade. Efficiency scores are determined using nonparametric DEA with different input-output sets and considering different frontiers: global frontier (all HEIs), pooled region-specific frontier (Europe and the U.S. having their own frontiers) and country-specific ones. The external factors affecting the degree of HEI inefficiency are investigated, e.g. institutional settings (size and department composition). Specifically, the results indicate a positive association between both regional departments and an institution's efficiency (for both the European and European HEIs are more efficient, but this is not confirmed for American HEIs). However, some country heterogeneity at the European level is found in support, resulting in the need to seek external resources and to provide first-class teaching and research in order to survive amid local and global competition.<sup>3</sup>

1. Introduction

Numbers are meaningful: according to the Academic Ranking of World Universities' 2016 fifteen of the top twenty universities were in the U.S., Americans published 23% of the total number of scientific articles in the period 1996–2015, counting 33% of the total citations.<sup>2</sup> This is perceived in the literature as the transatlantic gap – referring to the differences between Europe and the U.S. in the quality of academic research (Bonaccorsi et al., 2017). Because of this, it is not surprising that the American system of higher education is perceived to be pre-eminent and when higher education institutions (hereafter, HEIs) around the world are searching to improve their performance they look to universities in the U.S. as their benchmark model, while scholars from the whole world are attracted to American academia (Clotfelter, 2010). However, from the internal American perspective, the higher education sector is not free of problems, and its worldwide dominance has also recently been challenged (Altbach et al., 2011). Nowadays, HEIs in both continents are under pressure due to declining public

support, resulting in the need to seek external resources and to provide first-class teaching and research in order to survive amid local and global competition.<sup>3</sup>

This study has three main aims: firstly, to compare the technical efficiency of European and U.S. higher education institutions. Secondly, to evaluate the main factors that determine the efficiency of HEIs and to test whether these factors might have varying impacts on the European and U.S. efficiency. Thirdly, to address an evaluation problem, introducing DEA techniques as an analytic tool which can serve both HEI's managers and policymakers.

Data envelopment analysis (DEA) is used in this study – a methodology which constructs a production frontier in the multi-input/multi-output case – in order to evaluate the relative efficiency of a sample of 500 higher education institutions (in ten European countries and the U.S.) for the period between 2000 and 2012. Different models are estimated for different input-output sets and assumed frontier: global, regional and country-specific ones.

The research is motivated by the fact that most previous studies

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Example of electronic notes

When stereotypes meet robots: The double-edge sword of robot gender and personality in human-robot interaction

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ARTICLE INFO

Article history:  
Available online 14 June 2014

Keywords:  
Human-robot interaction  
Social robot  
User acceptance  
Social stereotypes  
Robot gender  
Robot personality

ABSTRACT

With the emerging application of social and psychological effects of occupational roles (security vs. extrovert vs. introvert) on user acceptance of a social robot in a healthcare and security context, two different roles of a healthcare and security robot. During the task, the robot manifested different personalities. Participants (n = 164) preferred the socially-occupational role stereotypes. This finding shows that participants do not monotonically influence user response to affect user acceptance of social robot. Results lay a foundation for designers to reduce various parameters under the big umbrella of social robot personality.

1. Introduction

The role of social robots has increasingly become diversified when compared to industrial robots that perform monotonous and repetitive tasks in factory settings. In accordance with the rapid development of relevant technologies and the increasing demand for human resources in social settings, robots are expected to play roles that are generally filled by humans in a variety of social contexts including the home, museums, subways, airports, and hospitals (Lee, Kwon, & Park, 2013). Public acceptance of social robots, however, is not simple since successful social robots require a good mixture of state-of-the-art technology and a capacity for friendly social interaction. Among various issues concerning human-robot interaction, user acceptance has been identified as a key element for successful implementation of social robots (Ezer, Fisk, & Rogers, 2009; Heerik, Riise, Evers, & Weinga, 2010). Along these lines, interest has recently been rising for the development of socially interactive robots that can accurately mimic human characteristics. This dimension of research aims to develop natural and intuitive human-robot interactions to facilitate user acceptance. One such attempt is to design humanoid robots with human features as well as androids that are aesthetically similar to real human beings. In addition, researchers have started to apply social characteristics in the design of social robots, including exhibiting a natural gaze, gestures, and distinctive personalities (Hwang, Park, & Hwang, 2013; Louje, Neerincx, & Gonsen, 2010).

In spite of the preliminary success in anthropomorphizing robots, simply applying human characteristics to social robots may cause aversive and repugnant psychological responses. For instance, Mori's Uncanny Valley (Mori, 1970) suggests that human responses toward human-like robots can be revolting when these robots look and act almost, but not perfectly, like human beings. In other words, when robots become or behave human-like, people start to pay more attention to the subtle differences between the robots and human beings rather than the great resemblance between the two, and this tends to trigger negative responses from people. As such, human social characteristics blindly applied to social robots could negatively influence people's perceptions toward social robots, under certain circumstances (Eyssele & Hegel, 2012).

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DOBRY ZDROJ  
POUŽIT V PRAKTICKE  
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JESU STEREOTYPNI  
ZOBRAZOVANI ROBOTI  
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VYNEČI MŮU  
MTELEWU

CITACE

Example of written notes

# Citation Management Tools

- Download and manage citations
- Create personal library
- Insert tags and notes
- Collaboration
- Generation of reference list
- Integrate with word processing software tools for easy insertion of citations into documents

Zotero

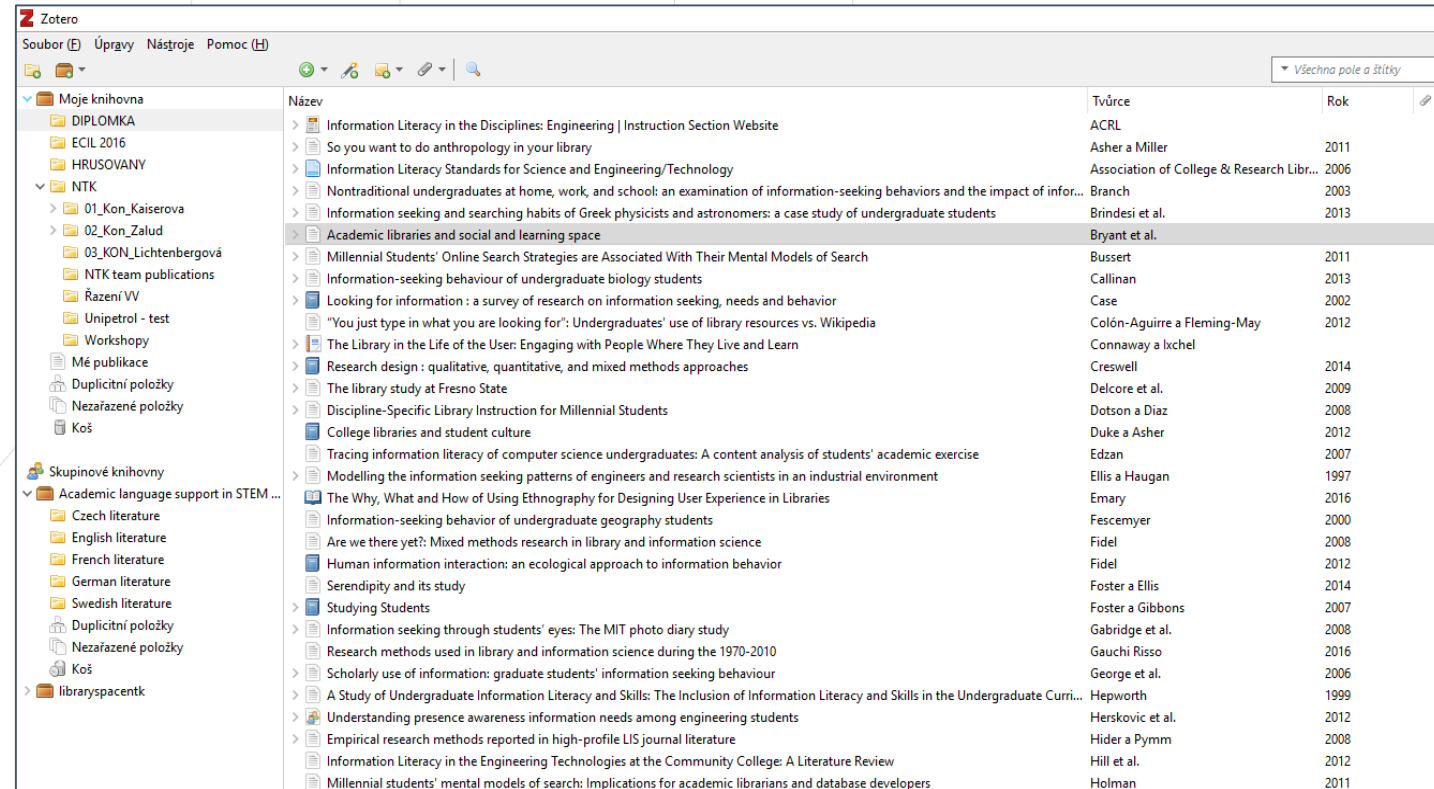
CitacePRO

Mendeley

Citavi

JabRef (integrated with LaTeX)

EndNote (subscription for UCT students)



**Use them, but don't  
trust them absolutely!**

# 7. PUBLISHING AND PRESENTING RESEARCH OUTPUTS



# Searching High-quality Journals and Conferences

- Ask your mentor and/or peers
- Use citation and analytical databases to identify reliable journals and conferences:  
Web of Science, Scopus, Inspec Analytics
- Try recommender services such as Elsevier JournalFinder, WoS Manuscript Matcher
- Review the quality & reputation (journal metrics, editorial board, conference organizers, mentor recommendations), peer-review process and author services provided; read tips about avoiding predatory and questionable conferences
- Consider relevance of the conference to your field as well as its intended audience
- Open Access, Open Data
- Article processing charge (APC) and other costs and benefits
- Learn whether you can submit the same content to multiple journals or conferences at the same time (or not)

# Searching High-quality Journals and Conferences

Eaton, S.E. (2018). Avoiding predatory journals and questionable conferences: A resource guide. *University of Calgary*. <https://files.eric.ed.gov/fulltext/ED579189.pdf>

Palmer, J. C. (2016). Navigating your first academic conference. *Psychological Science Agenda*. <https://www.apa.org/science/about/psa/2016/10/academic-conference>

Northcentral University Library (2021). *Research Process: Scholarly Publication*. <https://ncu.libguides.com/researchprocess/scholarlypublication>

Berkeley Library. (n.d.) *Scholarly Publishing*. <https://www.lib.berkeley.edu/scholarly-communication/publishing>

UNC University Libraries. (2021). Measure Your Research Impact: Where to Publish. <https://guides.lib.unc.edu/measure-impact/publish>

# Summary

- Activate **Library links on Google Scholar**
- Always make sure you are logged into the library web for **off-campus access to full-text articles**
- Contact your librarian for materials that are hard-to-find
- Make notes and create your own system to organize materials from the very beginning of a project
- Use citation managers, but don't trust them absolutely
- Critically consider journals and conferences and be aware of the publishing and conference submission process

# Get Assistance

## 1) Schedule a consultation

- Please don't be shy; our team includes doctoral students who know, the issues you face
- LaTeX support, Bibliometric services

## 2) Attend a webinar

## 3) Explore by yourself

- STEMskiller: comprehensive skills set map for early career researchers
- Tutorials: NTK instructional materials and recordings, further resources
- Subject guides



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**Thank you**  
**Questions?**