Library

Best Practice for Literature Searching

Meijun Huang

What will be covered today?

- The library resources and services for postgraduate students
- Key resources to find academic literature
- Introduction to literature search
- Build up a search strategy for a research question
- Modify your search strategy when things go wrong
- Find academic articles from databases and Google Scholar
- Find industry information

Knowledge check-in

Go to https://menti.com

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Answer two questions…

1. The library resources and services

- **The library collection**: books, journals and databases
- **Study guides**: TRP guide and subject guides
- **Referencing:** APA guide, EndNote
- **Request a resource**
- **Grammarly Premium**
- **Get help**

2. Introduction to literature search

Literature

- A collection of **relevant sources**, including **academic and industry** sources, such as journal articles, conference papers, books, theses, reports, and patents.

- **A literature review** critically analyses the **relevant literature** on a **research topic.** Your literature review does not need to include every publication but the **key sources**.

Key databases for finding academic sources

- Scopus: a citation database that includes peer-reviewed journal articles and conference papers
- Web of Science: a citation database that includes high-impact journal and conference papers
- ProQuest Science and Technology: includes journal articles, conference papers, theses and reports
- ACM digital library: contains journal articles, and conference papers published by the Association for Computing Machinery
- IEEE Xplore: contains journal articles, magazines, books, conference proceedings and standards published by IEEE and IET
- ASCE library: Journal articles and conference papers published by the American Society of Civil Engineers.

Resources for finding industry information

- Industry reports

  Gartner: reports on IT topics

  MarketLine Advantage: company and industry reports

- Statistics

  Statista

Sample topic:

Using machine learning to improve medical diagnosis

Find background information

- Use **books and reference sources** to get a general overview, e.g. AccessScience, O'Reilly Higher Education

- Find some **review articles** from a database, e.g. Web of Science, Scopus

- Find industry reports, e.g. Gartner

- Google Scholar: A great 'Scoping Tool'

Background reading

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Machine learning

Article by:

Stanescu, Ana Department of Computer Science, College of Science and Mathematics, University of West Georgia, Carrollton, Georgia.

Mata-Toledo, Ramon A. Department of Computer Science, James Madison University, Harrisonburg, Virginia.

Gupta, Pranshu Department of Mathematics and Computer Science, DeSales University, Center Valley, Pennsylvania.

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Content Hide

- How do machines learn?
- Related Primary Literature
- Additional Reading
- Applications

Key Concepts

Hide

- In machine learning—a branch of artificial intelligence—machines (software applications) learn from examples and can teach themselves how to solve problems without being programmed manually.
- Machine learning (ML) takes place through algorithms applied to structured data.
- A difficult task for ML practitioners is feature engineering—the process of transforming raw data into features that are important to the learning problem and can be used in pattern discovery.
- One of the most established and popular uses of ML is classification, in which the learning algorithm produces a model, or classifier, that can map examples to various discrete categories, or classes.
- Generalization is the ultimate goal of any ML algorithm The objective is to create a model that can be used to predict, or classify, new incoming data beyond the examples the machine has encountered during training, based on certain assumptions or constraints.

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Related Articles

Intelligent machine Any machine that can accomplish its specific task...

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Natural language processing The term natural language processing (NLP) can be...

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Published: 08 July 2017

Overview of deep learning in medical imaging

Kenji Suzuki

Radiological Physics and Technology **10**, 257–273(2017) | Cite this article

Abstract

The use of machine learning (ML) has been increasing rapidly in the medical imaging field, including computer-aided diagnosis (CAD), radiomics, and medical image analysis. Recently, an ML area called deep learning emerged in the computer vision field and became very popular in many fields. It started from an event in late 2012, when a deep-learning approach based on a convolutional neural network (CNN) won an overwhelming victory in the best-

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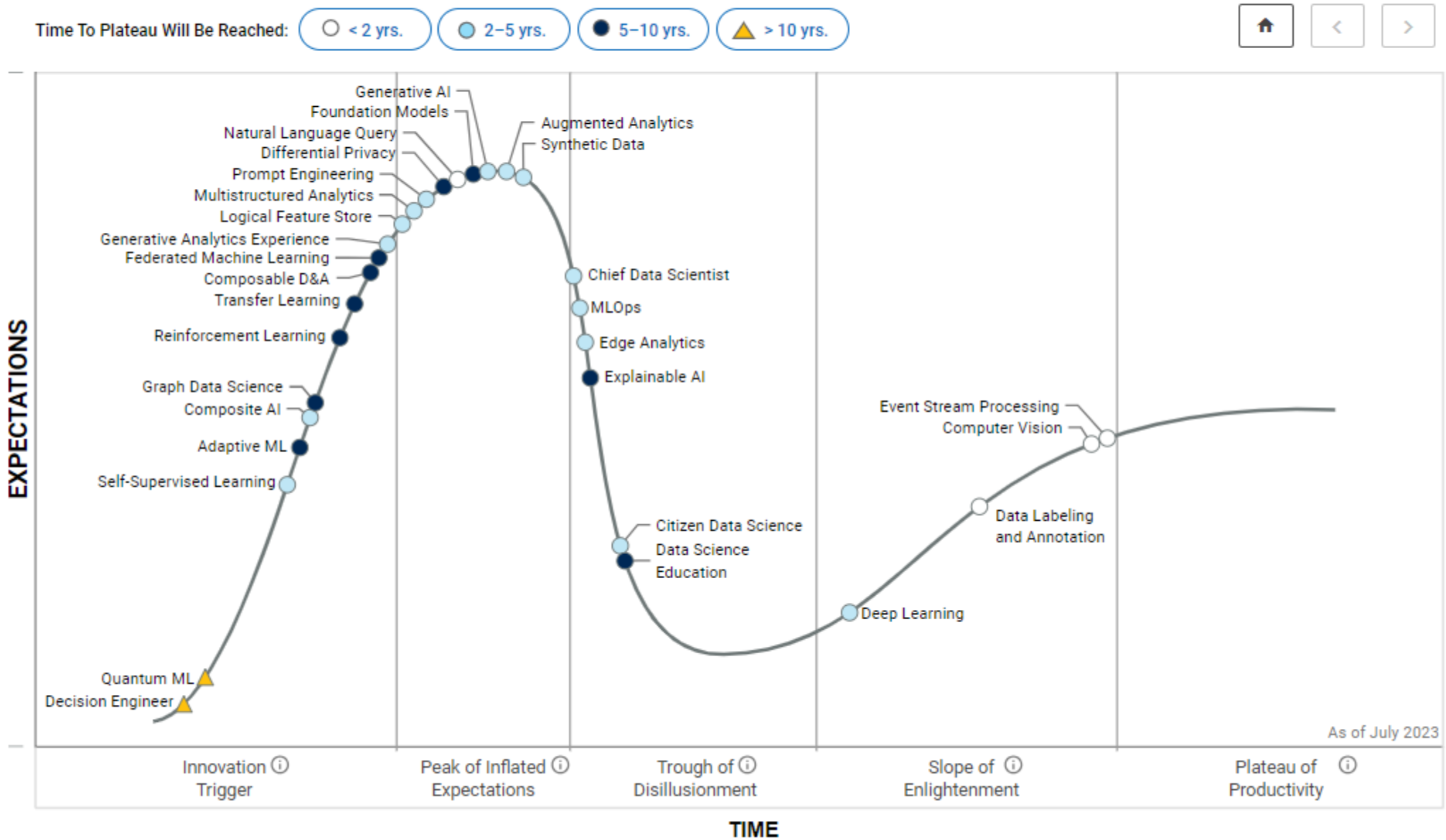
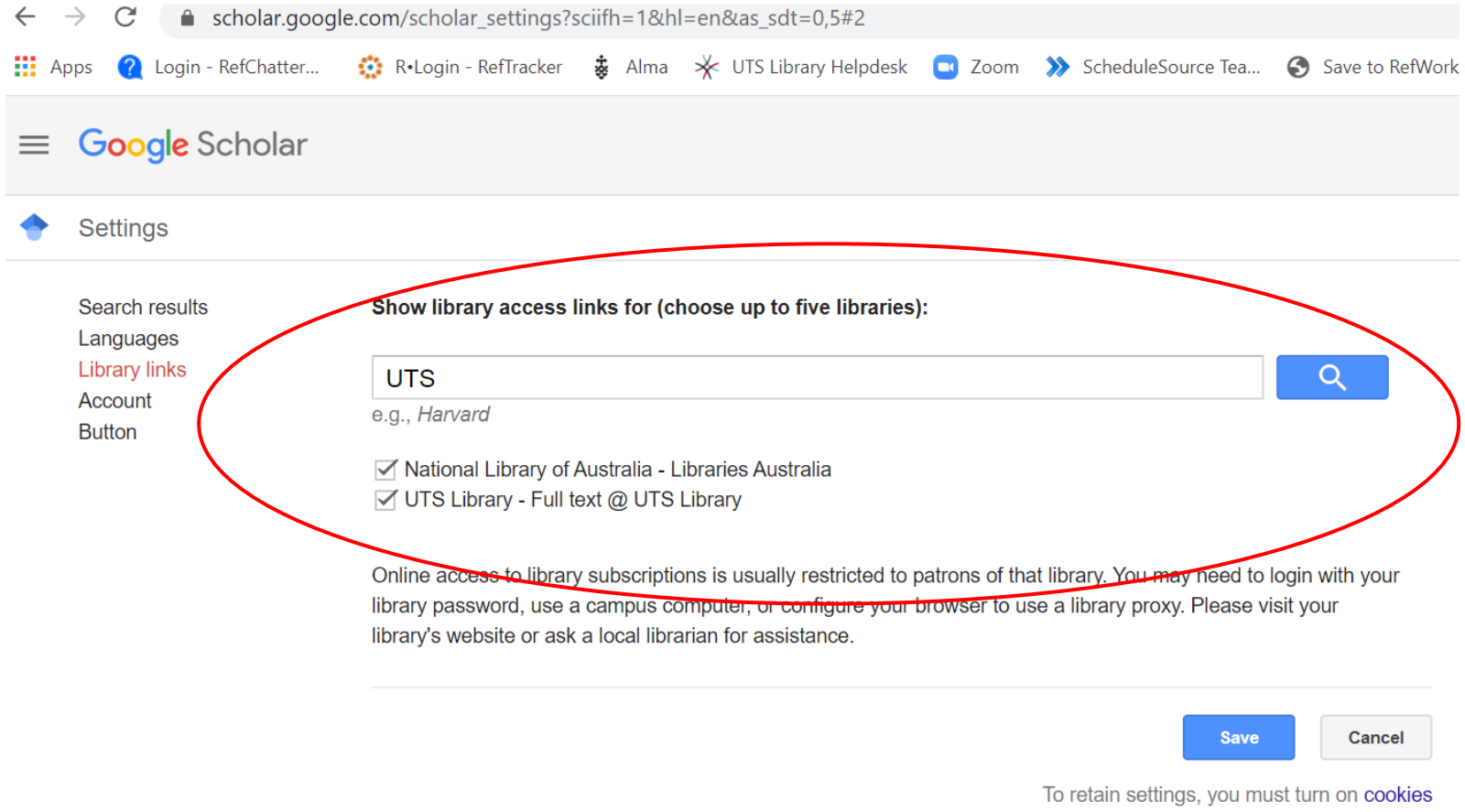


Google Scholar settings



LibKey Nomad: A browser extension to open articles from the library collection

http://libkeynomad.com/

- The library collection search results
- Third-party websites like PubMed, Google Scholar, Wikipedia
- Selected publishers' websites, including IEEE, ScienceDirect, ACM, ASCE

Make a concept table

Sample topic: Using machine learning to improve medical diagnosis

Main terms	machine learning	medical diagnosis
Related terms any aspects, components, methodology or technologies related to the keywords	image recognition pattern recognition algorithms data mining data analysis deep learning	computer-aided diagnosis computer-aided detection medical image analysis medical image processing lung cancer diagnosis liver caner diagnosis

3. Finding academic sources

Key databases for finding academic sources

For a broader search across different publishers

- Scopus
- Web of Science
- ProQuest Science and Technology
- Google Scholar

Search from one publisher

- ACM digital library
- IEEE Xplore
- ASCE library

Refined research topic

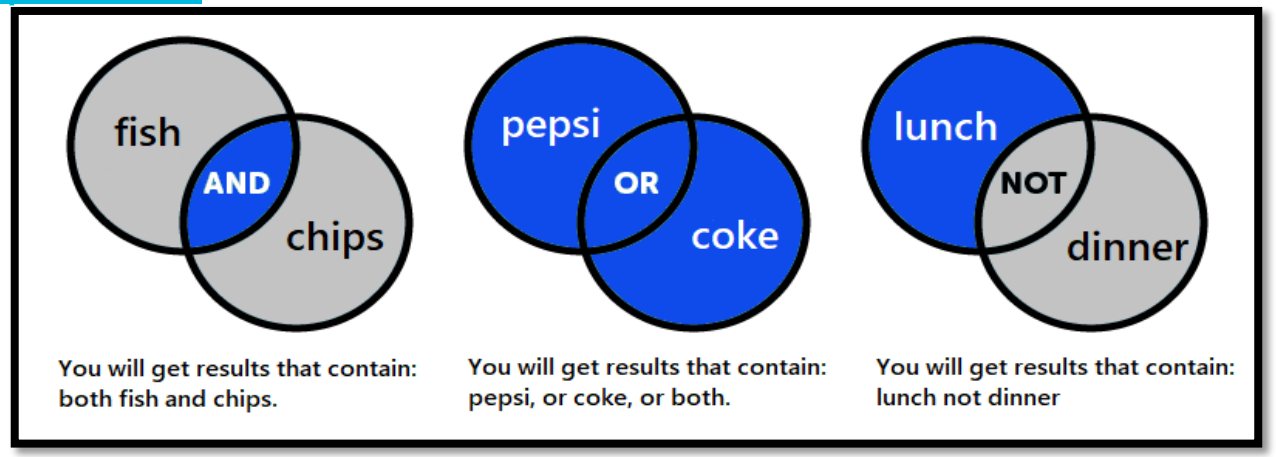
Using machine learning and image recognition technology to help lung cancer diagnosis

Database search skills

- Identify the **keywords** and **alternative terms** from your research question.

- Use “quotation marks” for exact **phrases**, e.g. “machine learning”.
- Use **truncation character “*”** to broaden the search, e.g. diagnos* will search diagnosis, diagnose and diagnostic.

- Use Boolean operators and brackets to group search terms: **AND, OR, NOT**. Watch Video Boolean Operators.



Keywords

Using machine learning and image recognition technology to help lung cancer diagnosis

Keywords and alternative terms

machine learning

image recognition, pattern recognition

lung cancer, lung tumor, lung tumour

diagnosis, detection

Search terms

“machine learning”

Imag*, pattern

“lung cancer”, “lung tumo*”

diagnos*, detect*

Boolean operators and brackets

"machine learning"
AND
(Imag* OR pattern)
AND
("lung cancer" OR "lung tumo*")
AND
(diagnos* OR detect*)

Search string: which one is correct?

A:

"machine learning" **AND** imag* **OR** pattern **AND** "lung cancer" **OR** “lung tumo*” **AND** diagnos* **OR** detect*

B:

"machine learning" **AND** (imag* **OR** pattern) **AND** ("lung cancer" **OR** “lung tumo*”) **AND** (diagnos* OR detect*)

C:

"machine learning" **AND** (imag* **AND** pattern) **AND** ("lung cancer" **AND** “lung tumo*”) **AND** (diagnos* AND detect*)

Search sample

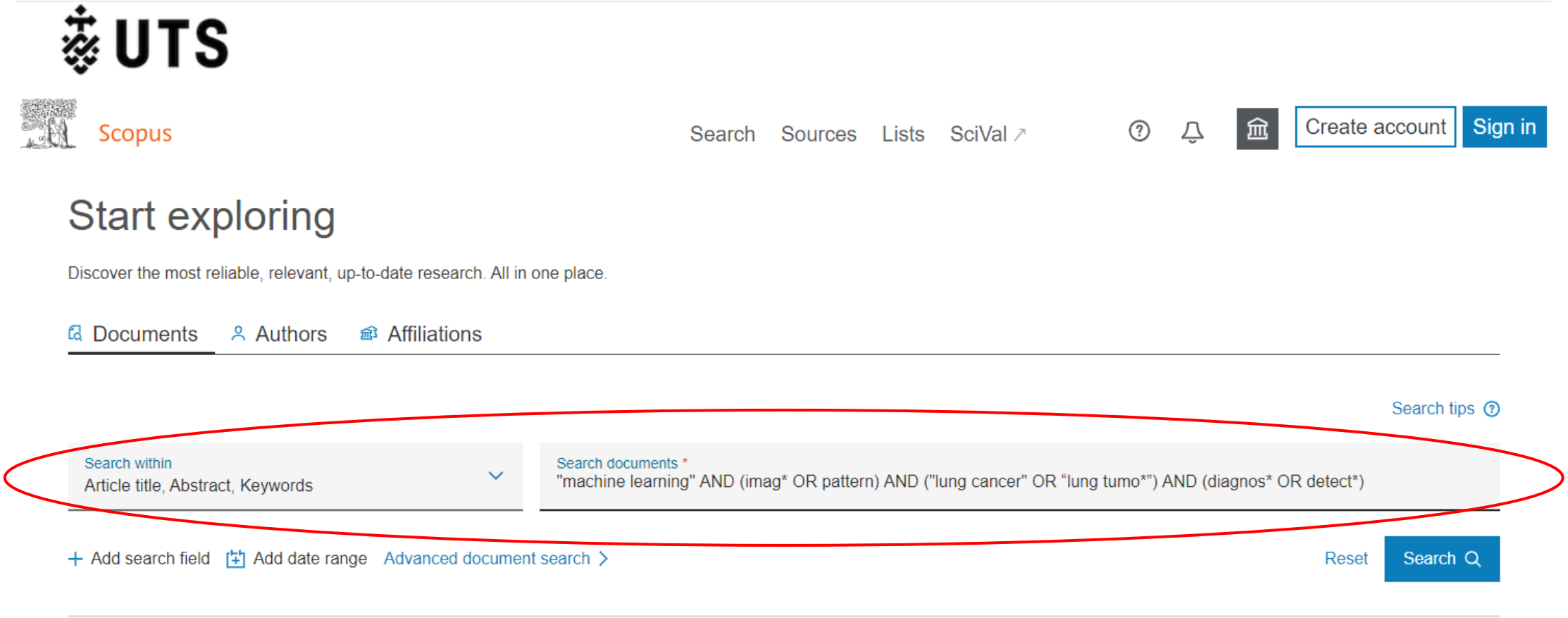
- **Refined research topic:**

Using machine learning and image recognition technology to help lung cancer diagnosis

- **Search string:**

"machine learning" **AND** (imag* **OR** pattern) **AND** ("lung cancer" **OR** “lung tumo*”) **AND** (diagnos* **OR** detect*)

Scopus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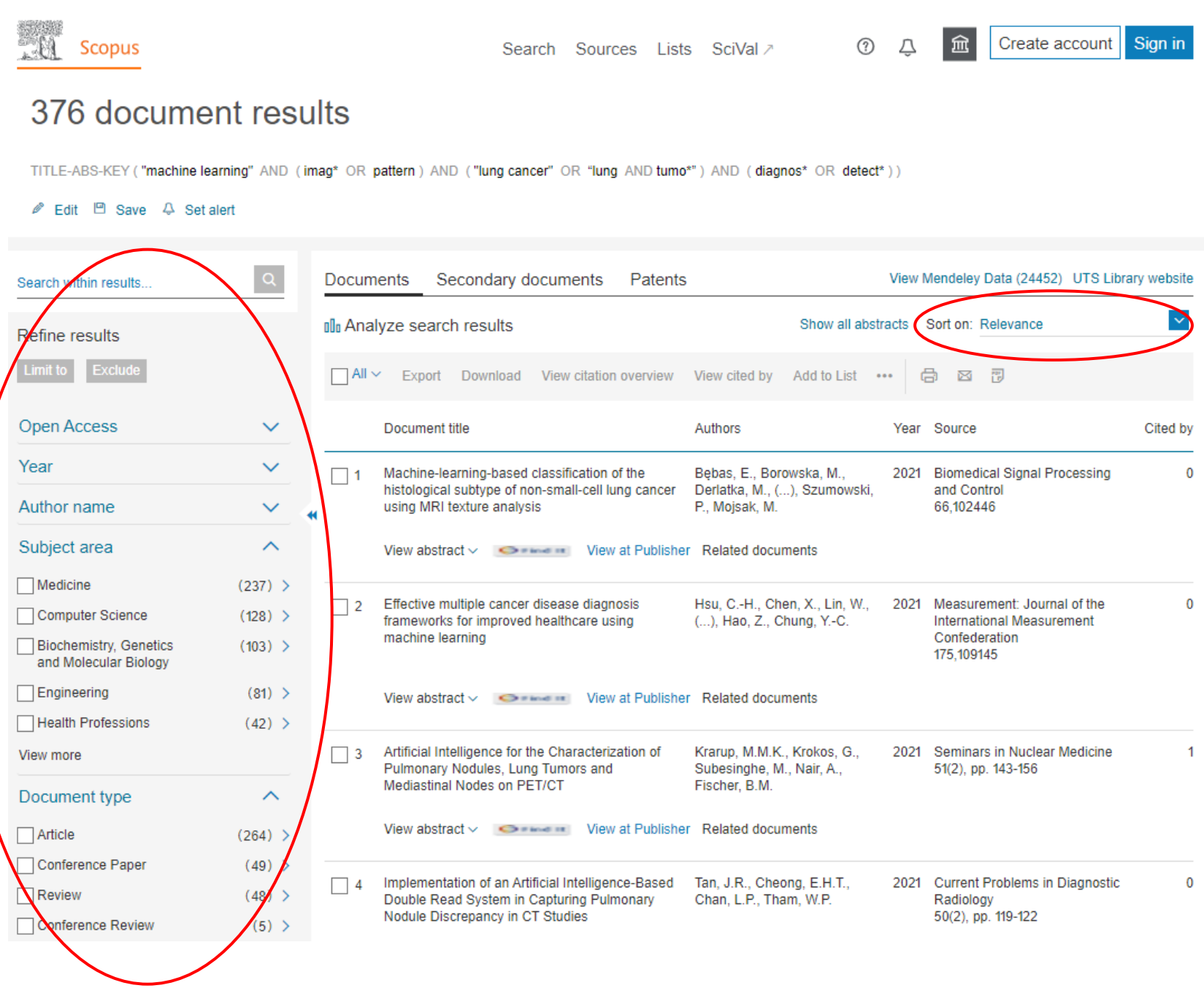
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TITLE-ABS-KEY ("machine learning" AND (imag* OR pattern) AND ("lung cancer" OR "lung AND tumo*") AND (diagnos* OR detect*))
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Bębas, E., Borowska, M., Derlatka, M., (...), Szumowski, P., Mojsak, M.
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Biomedical Signal Processing and Control 66,102446
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2021
Current Problems in Diagnostic Radiology 50(2), pp. 119-122
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Modify the search strategy

- Use broader terms to extend the search.

"machine learning" AND (imag* OR pattern) AND (lung or thoracic or chest) AND (diagnos* OR detect*)

("machine learning" OR “deep learning”) AND (imag* OR pattern) AND (lung or thoracic or chest) AND (diagnos* OR detect*)

- Use more specific terms to narrow the search.

"deep learning" AND (imag* OR pattern) AND ("lung cancer" OR “lung tumo*”) AND (diagnos* OR detect*)

Wrap-up activity

Go to https://menti.com

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Answer two questions…

Questions?

Post your questions in Chat.