

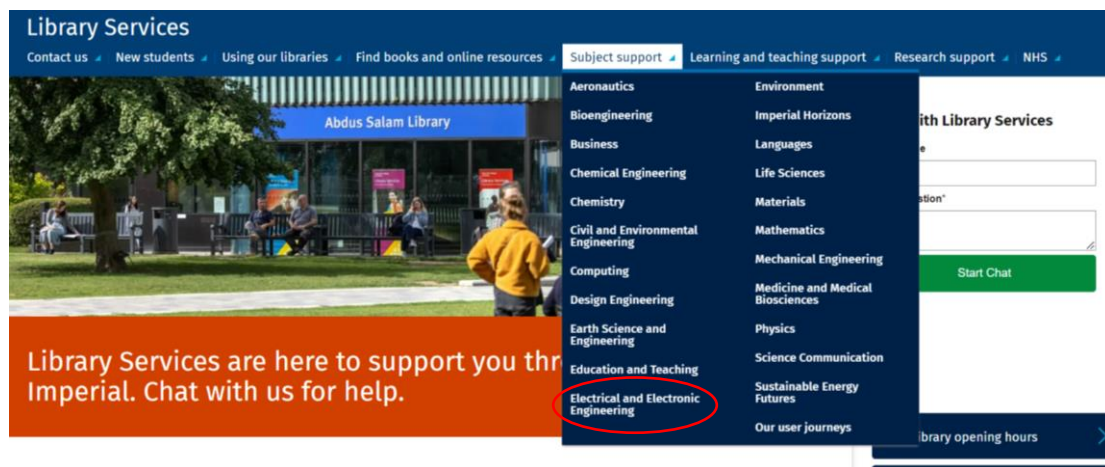
Searching academic databases

What are academic databases?

Academic databases are **curated, subject-specific, references to academic material** such as peer-reviewed journal articles, book chapters, conference papers and theses. Databases also give access to the **full-text** of this material. Searching databases will save you time as they search across multiple sources at once.

How to access databases?

- 1) Discover the range of available databases on **EEE Subject Support library page**: www.imperial.ac.uk/admin-services/library/subject-support/electrical-and-electronic-engineering/



- 2) You can access database on and off-campus, using your college credentials. For more guidance on accessing databases and other e-resources off-campus see our [online guide](#)

Searching academic databases

Plan your search.

- Before you begin your search, think about the keywords you need to use in your search.
- Keep a record of what you have searched, the search terms used, and the databases searched.

Search tips:

Step 1: Identify the **key concepts/keywords** relevant to your topic.

Example topic: Level-crossing analog-to-digital converter modeling for electrocardiogram sampling

The keywords are:

Level-crossing analog-to-digital converter, electrocardiogram and modeling

Step 2: Think of possible **synonyms/alternative words** for your chosen keywords.

e.g. in the above example, possible synonyms include:

Level-crossing analog-to-digital converter	electrocardiogram
Level crossing ADC	ECG
LC-ADC	

Step 3: Use operators

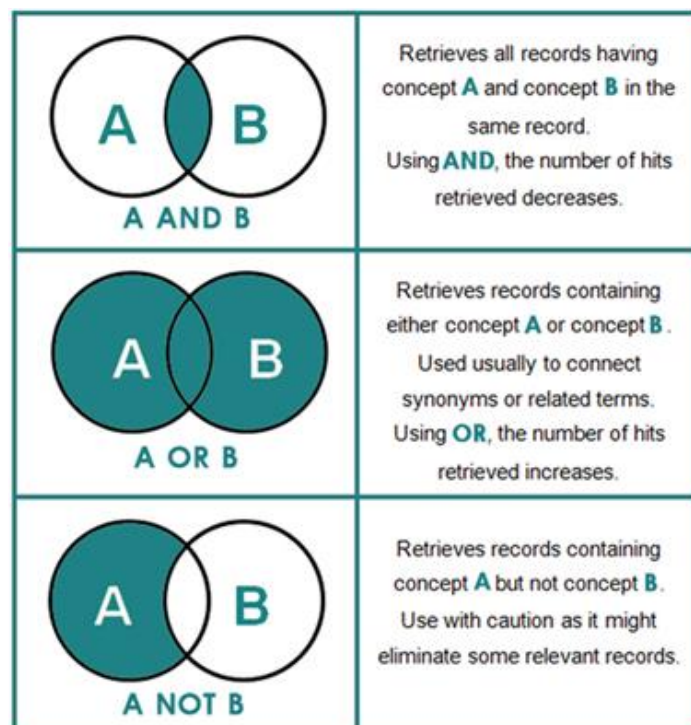
- **“Phrase searching” to narrow your search** - placing quotation marks around two or more words to create a search term. This forces the database to search for those words as a phrase and not as individual words.

e.g. **“Level-crossing analog-to-digital converter”**, **“Level crossing ADC”**

- **Truncation * to expand your search** – by placing an asterisk * at the root of a word, the database will search for different word endings, spellings, singular/plural forms of that word. For example, in the case of the word **converter**:

e.g. **convert* = convert, converter, converters, conversion, etc.**

- **Use connecting operators:**
 - **AND** - narrows your search
 - **OR** - expands your search
 - **NOT** - narrows by excluding terms from your search



Step 4: Create a **search string**, using the connecting operators to combine the keywords and synonyms. For example:

“Level-crossing analog-to-digital convert*” **OR**
“Level crossing ADC” **OR** LC-ADC

AND

Electrocardiogram **OR** ECG

AND

Modeling

NOTE: Watch this short [video](#) (6.41 mins) for more guidance developing search strategies.

Database example (IEEE Xplore)

Below is an example (from IEEE Xplore) of what the above search string looks like in a database search. Note the connecting operators – **And** and **OR**.

The screenshot shows the IEEE Xplore Advanced Search page. At the top, there's a navigation bar with 'IEEE Xplore', 'Browse', 'My Settings', 'Help', 'Imperial College London', 'Access provided by: Imperial College London', 'Sign Out', and the IEEE logo. Below this is a search bar with a dropdown menu set to 'All' and a search button. The main section is titled 'Advanced Search' (circled in red) with a red note: 'Make sure that you are on the Advanced Search page to access the option to use multiple search fields'. There are three tabs: 'Advanced Search', 'Command Search', and 'Citation Search'. The 'Advanced Search' tab is active. Below the tabs, it says 'Enter keywords and select fields.' There are three search fields, each with a dropdown menu set to 'Full Text & Metadata'. The first field contains the search term: "Level-crossing analog-to-digital convert*" OR "Level crossing ADC" OR LC-ADC. The second field contains: AND Electrocardiogram OR ECG. The third field contains: AND Modeling. To the right of the search fields, there's a red note: 'Select the "Full text & Metadata" option from drop down list to get a fuller set of results'. On the far right, there's a 'Preferences' section with links for 'Learn More', 'Data Fields', 'Search Examples', and 'Search Operators'.

Below is an example of the search results page:

The screenshot shows a search results page with the following elements and annotations:

- 1**: Points to the search results count, "Showing 1-25 of 1,037 results".
- 2**: Points to the "Sort By" dropdown menu, which is set to "Relevance".
- 3**: Points to the document type filters on the right, including "Conferences (464)", "Journals (448)", "Books (80)", and "Early Access Articles (24)".
- 4**: Points to the left sidebar filters, including "Show" (All Results, Subscribed Content, Open Access Only), "Year" (Range, Single Year), and "Author", "Affiliation", "Publication Title", "Publisher", "Supplemental Items", and "Conference Location".
- 5**: Points to the "Abstract" link for the first article.
- 6**: Points to the PDF icon for the first article.
- 7**: Points to the bibliographic details of the first article, including the title, authors, journal, year, volume, issue, and publisher.

As you will notice, the matching keywords from the search string are highlighted in yellow to make it easier for you to see the most relevant articles.

- 1** – Number of results found
- 2** – Option to sort results by a range of different categories, e.g. Relevance, i.e. matching keywords, dates, citations, etc.
- 3** – Option to refine your results by document type.
- 4** – Option to refine your results using a range of filters such as publication year, author, etc.
- 5** – Option to read the abstract which will provide you with a summary of what the article is about.
- 6** – Option to access the full text of the article as a PDF.
- 7** – Bibliographic details of the paper which you will use when referencing this article.

Below is an example of one of the articles:

Journals & Magazines > IEEE Transactions on Biomedic... > Volume: 17 Issue: 6

Second-Order Level-Crossing Sampling Analog to Digital Converter for Electrocardiogram Delineation and Premature Ventricular Contraction Detection

Publisher: IEEE [Cite This](#) [PDF](#)

Xiaochen Tang ; Mario Renteria-Pinon ; Wei Tang [All Authors](#)

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Abstract

Document Sections

- I. Introduction
- II. Circuit and System Design
- III. Experimental Result
- IV. Discussion
- V. Conclusion

Authors

Figures

References

Keywords **2**

Metrics

Footnotes

Abstract:

This article presents an electrocardiogram (ECG) delineation and arrhythmia heartbeat detection system using a novel second-order level-crossing sampling analog to digital converter (ADC) for real-time data compression and feature extraction. The proposed system consists of the front-end integrated circuit of the data converter, the delineation algorithm, and the arrhythmia detection algorithm. Compared with conventional level-sampling ADCs, the proposed circuit updates tracking thresholds using linear extrapolation, which forms a second-order level-crossing sampling ADC that has sloped sampling levels. The computing is done digitally and is implemented by modifying the digital control logic of a conventional Successive-approximation-register (SAR) ADC. The system separates the sampling and quantization processes and only selects the turning points in the input waveform for quantization. The output of the proposed data converter consists of both the digital value of the selected sampling points and the timestamp between the selected sampling points. The main advantages are data savings for the data converter and the following digital signal processing or communication circuits, which are ideal for low-power sensors. The test chip was fabricated using a 180 nm CMOS process. When sensing sparse signals such as ECG signals the proposed ADC achieves a compression factor of 8.33. The delineation algorithm uses a triangle filter method to locate the fiducial points and measures the intervals, slopes, and morphology of the QRS complex and the P/T waves. Those extracted features are then used in the arrhythmia heartbeat detection algorithm to identify Premature Ventricular Contraction (PVC). The overall performance of the system is evaluated using the MIT-BIH database and the QT database, which is also compared with the recently reported systems. The accuracy, sensitivity, specificity, PPV, and F1 score are 97.3%, 89.6%, 97.8%, 73.3%, and 0.81 for detecting PVC.

(Show More)

Published in: IEEE Transactions on Biomedical Circuits and Systems (Volume: 17 , Issue: 6, December 2023)

More Like This **3**

Arrhythmia Detection using Electrocardiogram and Phonocardiogram Pattern using Integrated Signal Processing Algorithms with the Aid of Convolutional Neural Networks

2021 IEEE International Conference on Automatic Control & Intelligent Systems (ICACIS)

Published: 2021

Efficient Electrocardiogram-based Arrhythmia Detection Utilizing R-peaks and Machine Learning

2023 International Conference on System Science and Engineering (ICSSSE)

Published: 2023

[Show More](#)

1 – Option to export the reference to a reference management software tool, e.g. RefWorks, BibTeX, EndNote, etc. (Please note, some databases will offer a ‘download’ or an ‘Export’ option instead of a ‘Cite This’ option).

2 – Keywords associated with the article, which you could use to find other relevant papers.

3 – Other suggested papers on the same topic that might be useful to you.