

Research Skills

Advanced MSc and PhD Students

<http://www.cs.bham.ac.uk/~jxb/rs.html>

Lecture 4 Organised and Systematic Literature Search

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Summary of previous two lectures

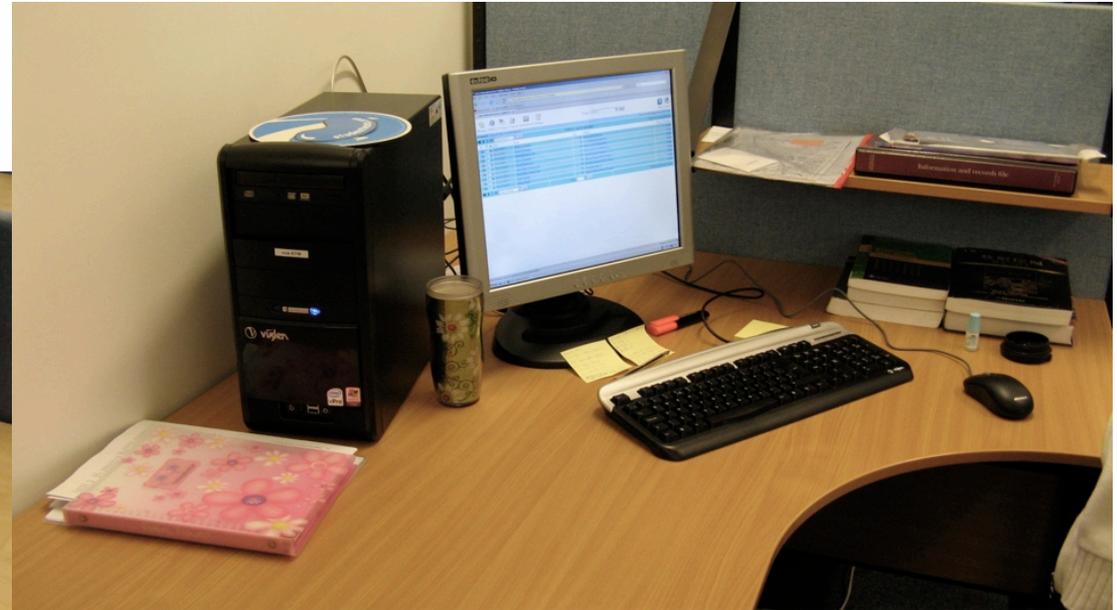
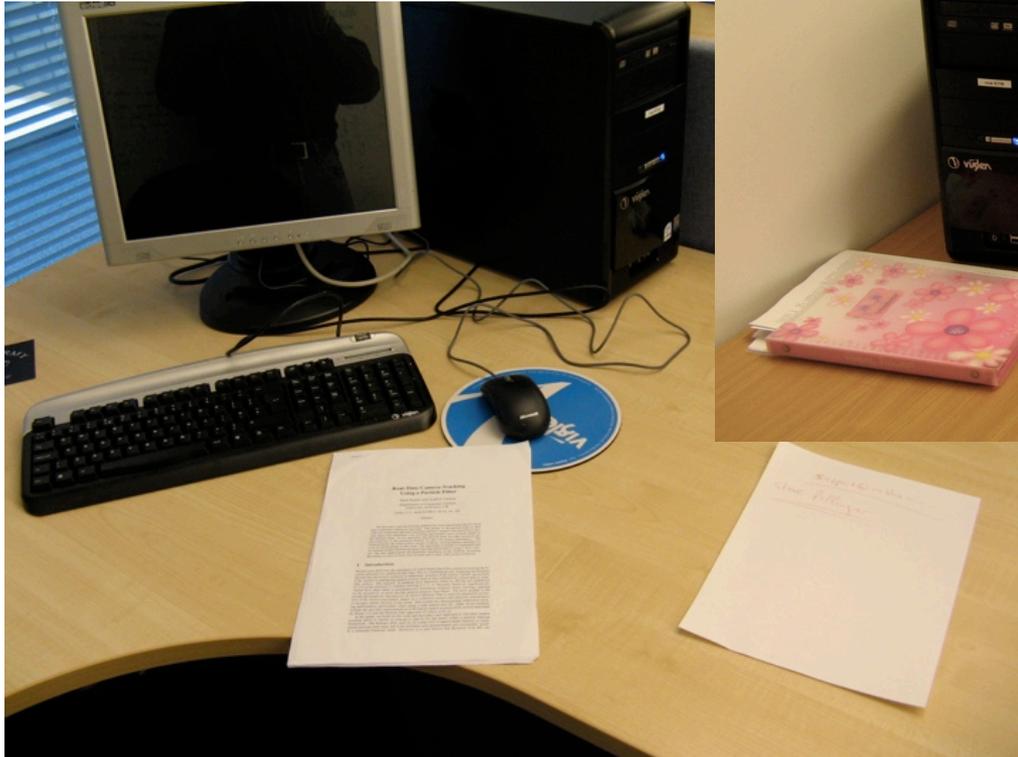
- Importance of literature search and review
- Forms of scientific dissemination
- Search strategies
- Changing scenario for databases and search
- Overview of search engines and search techniques
- Use of keywords
- Access to university resources

Literature searching & review

A **long process** that can last months or years

- **Not** always **continuous** in time
- The amount of **information** gathered **increases with time**
- It can **change direction** in time or simply **focus** on different aspects (sub-field) of the general topic

Literature searching & review how it starts



Literature searching & review how it might end up



Literature searching & review

➔ **It becomes difficult to**

- **remember** papers, terms and keywords, authors already reviewed
- **know** what was found already and what still need to be searched
- **retrieve** again a paper that has been found and read earlier

If one doesn't remember all the papers and terms, doesn't have a clear picture of what was found and not, has difficulty fetching papers already found

➔ **literature search is unsystematic and sub-optimal**

Organisation and systematic search

A **systematic literature search** can be more easily performed if the **incoming material** is kept well **organised**

- What keywords have I used so far?
- How many papers did I find on a certain topic?
- When was that I last found a paper with a given keyword?
- What are the catalogues I have used so far?
- Can I quickly gather all the papers I found on a certain topic?
- Can I quickly retrieve a paper with a certain title, author?
- Considering the result so far, what and how should I search more?

Organisation and systematic search

How can one answer all the previous questions?

Reference management software could help!

http://en.wikipedia.org/wiki/Reference_management_software

A comparison of software

http://en.wikipedia.org/wiki/Comparison_of_reference_management_software

Note:

- the use of Bibtex files with Latex will be explained in Lecture 6
- the correct way of citing and referencing will be explained in Lecture 12

Organisation and systematic search

Overview of JabRef

- JabRef is reference management software. It's free and available for Windows, Linux and Mac OS X

Note: JabRef is one example, other software can also be good or more suitable to personal requirements

Demonstration on how one can

- Insert entries with keywords, abstracts, comments, reviews
- Link entries to downloaded PDF files
- Search entries (authors, titles, etc.)
- Visualise entries by keyword (groups)
- Use date of entry insertion to track the progress and arrange reading and new searches
- Use this organised information to formulate new searches

JabRef interface

The screenshot displays the JabRef interface with a toolbar at the top. On the left, there is a search panel with a search bar, a 'Search All Fields' button, a 'Clear' button, and radio buttons for 'Incremental', 'Float' (selected), and 'Filter'. Below the search panel is a 'Groups' panel listing various categories like 'Norepinephrine', 'Prediction', 'evolving neural networks', 'Fuzzy logic', 'Aplysia' (highlighted), 'GasNet', 'Hippocampal theta rhythm', 'Neuroevolution', 'Neuroscience', 'learning', 'GABA', 'Ethology', and 'ANNs'. The main window shows a table of bibliographic entries with columns for '#', 'Local-url', 'Entry...', 'Author', 'Title', 'Y...', 'Journal', 'Date-added', and 'Bibtexkey'. The first entry is selected. Below the table, a detailed view of the selected entry is shown, with tabs for 'Required fields', 'Optional fields', 'General', 'Abstract', and 'Review'. The 'Required fields' tab is active, showing fields for Author, Title, Journal, Year, Volume, Pages, and Bibtexkey.

#	Local-url	Entry...	Author	Title	Y...	Journal	Date-added	Bibtexkey
1	baxter...	Article	Baxter et al.	Computational {M}odel of the ...	1999	Journal of ...	2007-07-...	baxter...
2	bremb...	Article	Brembs et al.	Operant {R}eward {L}earning...	2002	Science	2007-03-...	bremb...
3	burrell...	Article	Burrell and Sa...	Learning in simple systems	2001	Current Op...	2007-03-...	burrel...
4	carew...	Article	Carew et al.	Classical conditioning in a sim...	1981	The Journal...	2007-07-...	carew...
5	deodh...	Article	Deodhar	{S}tudies on {N}euromodulati...	2000	Adaptive B...	2007-07-...	deodh...
6	kandel...	Article	Kandel and T...	Heterosynaptic facilitation in n...	1965	J. Physiol.	2007-05-...	kandel...
7	marcu...	Article	Marcus and C...	Developmental emergence of d...	1998	PNAS, Neu...	2007-07-...	marcu...
8	roberts...	Article	Roberts and G...	Learning in Aplysia: looking at...	2003	Trends in ...	2007-01-12	Robert...
9	sunSc...	Article	Sun and Scha...	Binding of {S}erotonin to {R}...	1998	The Journal...	2007-07-...	sunSc...

Article

Required fields Optional fields General Abstract Review

Author: Baxter, Douglas A. and Canavier, Carmen C. and Clark, John W. and Byrne, John H.

Title: Computational (M)odel of the (S)erotonergic (M)odulation of (S)ensory (N)eurons in (A)plysia

Journal: Journal of Neurophysiology Toggle abbreviation

Year: 1999

Volume: 82

Pages: 1914–2935

Bibtexkey: baxterCanvierClarkByrne1999

Status: Updated group selection.

Organisation and systematic search Ref. Management Software

- PDF files can be viewed instantly from the database
- Searches on terms, authors, journals are easy to perform
- Overview on keywords allows to see how well all areas of interested are covered
- Insertion time-stamp allows to track the progress of search, or to postpone reading of papers without forgetting

Literature search: how to secure your progress - I

JabRef, as other software, stores information in plain text in a file with “bib” extension

The database ideally is updated daily or weekly and in time (years) can grow from few entries up to hundreds (for a PhD)

Suggestion: use **version control system (VCS)** to **secure your progress**

Literature search: how to secure your progress - II

The School of Computer Science has a **Subversion Service** available to all postgraduates

At <http://supportweb.cs.bham.ac.uk/services/subversion/> are the instruction on how to set up the service

Useful not only for your bibliography file but also for plain text files that are updated frequently:

- The log file of your activity
- Software you are coding
- Thesis