NAVODAYA INSTITUTE OF TECHNOLOGY, RAICHUR

DEPARMENT OF COMPUTER SCIENCE & ENGINEERING

MODULE 2

LITERATURE REVIEW AND TECHNICAL READING, ATTRIBUTIONS AND CITATIONS

Syllabus

Literature Review and Technical Reading, New and Existing Knowledge, Analysis and Synthesis of Prior Art, Bibliographic Databases: Web of Science, Google and Google Scholar, Effective Search: The Way Forward, Introduction to Technical Reading, Conceptualizing Research, Critical and Creative Reading, Taking Notes While Reading, Reading Mathematics and Algorithms, Reading a Datasheet.

Attributions and Citations: Giving Credit Wherever Due, Citations: Functions and Attributes, Impact of Title and Keywords on Citations, Knowledge Flow through Citation, Citing Datasets, Styles for Citations, Acknowledgments and Attributions, What Should Be Acknowledged, Acknowledgments in, Books Dissertations, Dedication or Acknowledgments.

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LITERATURE REVIEW AND TECHNICAL READING

- The primary goal of literature review is to know the use of content/ideas/approaches in the literature to correctly identify the problem that is vaguely known beforehand, to advocate a specific approach adapted to understanding the problem, and to access the choice of methods used.

- It also helps the researcher understand clearly that the research to be undertaken would contribute something new and innovative.

- The quality of such review can be determined by evaluating if it includes appropriate breadth and depth of the area under study, clarity, rigor, consistency, effective analysis.

NEW AND EXISTING KNOWLEDGE

- New knowledge in research can only be interpreted within the context of what is already known, and cannot exist without the foundation of existing knowledge.
- The new knowledge can have vastly different interpretations depending on what the researcher's background, and one's perception of that new knowledge can change from indifference to excitement (or vice versa), depending on what else one knows.
- The significance can normally be argued from the point of view that there is indeed an existing problem and that it is known by looking at what already exists in the field.
- The existing knowledge is needed to make the case that there is a problem and that it is important.
- One can infer that the knowledge that is sought to be produced does not yet exist by describing what other knowledge already exists and by pointing out that this part is missing so that what we have is original. To do this, one again needs the existing knowledge: the context, the significance, the originality, and the tools.
- Normally, one finds this knowledge by reading and surveying the literature in the field that was established long ago and also about the more recent knowledge which is in fact always changing.
- With this foundation in place, the new knowledge that one will make will be much more difficult to challenge than without that strong foundation in place which is ensured with lots of references to the literature.
- Often, but not always, the textbooks contain the older established knowledge and the research papers the newer work. Reading the textbooks on one's topic provide the established knowledge and the background to be able to read the newer work usually recorded in the research papers
- The research paper is written for other researchers out on the edge of knowledge and it assumes that the reader already knows a lot in that field

- The review process must explain how a research item builds on another one. An effective review of literature ensures a firm foundation for advancing knowledge, facilitates theoretical growth, eliminates as areas that might be of interest, and opens new avenues of possible work

- Generally, a good literature survey is the first expectation of a supervisor from the research student, and when done well can create a good impression that the state of art in the chosen field is well understood

- A good literature review would not draw hasty conclusions and look into the individual references to determine the underlying causes/assumptions/mechanisms in each of them so as to synthesize the available information in a much more meaningful way

- A good literature survey is typically a two-step process as enumerated below:
  - Identify the major topics or subtopics or concepts relevant to the subject under consideration.
  - Place the citation of the relevant source (article/patent/website/data, etc.) in the correct category of the concept/topic/subtopic

- It could be that as one is reading and comes across something that one considers to be very important for one's work. Naturally, one highlights that section or underlines it, or put an asterisk in the margin, so that one could come back to it later. Effectively, one is saying that it is important and hence the marking so as not to forget it.

- A comprehensive literature survey should methodically analyze and synthesize quality archived work, provide a firm foundation to a topic of interest and the choice of suitable research methodologies, and demonstrate that the proposed work would make a novel contribution to the overall field of research.

ANALYSIS AND SYNTHESIS OF PRIOR ART

- After collecting the sources, usually articles, intended to be used in the literature review, the researcher is ready to break down each article and identify the useful content in it, and then synthesize the collection of articles (integrate them and identify the conclusions that can be made from the articles as a group).

- A researcher should analyze the relevant information ascertained in below table by undertaking the following steps:

o Understanding the hypothesis, o Understanding the models and the experimental conditions used, o Making connections,

o Comparing and contrasting the various information, and o Finding out the strong points and the loopholes.

	Source 1	Source 2	...	Source M
Topic 1		✓		
Topic 2	✓			✓
⋮				
⋮				
Topic N	✓	✓		

- A literature survey grid of N topics and M sources is shown above to help crystallize the information in different categories.

- It is always good to be suspicious of the claims made in the sources that have been thoroughly reviewed, especially in the case of tall claims.

- If one is amenable to easily accept whatever is available in the literature, one may find it difficult to go beyond it in one's own work and may also fail to carefully analyze with a suspicious bent of mind one's own results subsequently.

- The goal of literature survey is to bring out something new to work on through the identification of unsolved issues, determine the problems in the existing models or experimental designs, and present a novel idea and recommendations.

- No matter where one gets the available information, one needs to critically evaluate each resource that the researcher wishes to cite. This methodology analyzes available materials to determine suitability for the intended research.

- Relying on refereed articles published in scholarly journals or granted patents can save the researcher a lot of time.

- Here are a few criteria that could help the researcher in the evaluation of the information under study:

o Authority: What are the author's credentials and affiliation? Who publishes the information?

o Accuracy: Based on what one already knows about the topic or from reading other sources, does the information seem credible? Does the author cite other sources in a reference list or bibliography, to support the information presented?

o Scope: Is the source at an appropriate comprehension or research level?

BIBLIOGRAPHIC DATABASES

- ―Bibliographic databases‖ refer to ―abstracting and indexing services‖ useful for collecting citation-related information and possibly abstracts of research articles from scholarly literature and making them available through search.

- Performing simultaneous searches through such large databases may allow researchers to overtly rely on any one database and be limited by the intrinsic shortcoming of any one of them for quality research.

- A researcher should be able to quickly identify the databases that are of use in the idea or problem that one wishes to explore.

Web of Science

- Web of Science (formerly known as ISI or Thomson Reuters) includes multiple databases, as well as specialized tools.

- It is a good search tool for scholarly materials requiring institutional license and allows the researcher to search in a particular topic of interest, which can be made by selection in fields that are available in drop down menu such as title, topic, author, address, etc.

- The tool also allows sorting by number of citations (highest to lowest), publication date.

- Put quotes around phrases, add more keywords, or use the ―Refine Results‖ panel on the left to narrow down the search by keyword, phrases in quotation marks, type of material such as peer-reviewed journal articles, date, language, and more.

- ―Cited reference search‖ option enables a researcher to trace articles which have cited a formerly published paper. Using this element, it is possible to find how a familiar idea has been applied, improved, or extended subsequently.

- A structured search like this that enables narrowing and refining what one is looking for is effective to ensure that the results throw up relevant sources and time spent in studying those is likely to be well utilized.

- Based on the researcher's need the search result can be broadened or narrowed down using the built-in fields provided in this website.

- When clicked on any of the search results, this website provides the title of the paper, authors, the type of journal, volume, issue number and year of publication, abstract, keywords, etc., so that the researcher has enough information to decide if it is worthwhile to acquire the full version of the paper.

Google and Google Scholar

- Google is a great place to start one's search when one is starting out on a topic. It can be helpful in finding freely available information, such as reports from governments, organizations, companies, and so on. However, there are limitations:
    - It's a —black box‖ of information. It searches everything on the Internet, with no quality control—one does not know where results are coming from.
    - There are limited search functionality and refinement options.
- Google Scholar limits one's search to scholarly literature. However, there are limitations:
    - Some of the results are not actually scholarly. An article may look scholarly at first glance, but is not a good source upon further inspection.
    - It is not comprehensive. Some publishers do not make their content available to Google Scholar.
    - There are limited search functionality and refinement options.
- There are search operators that can be used to help narrow down the results. These help one to find more relevant and useful sources of information.
- Operators can be combined within searches. Here are some basic ones that one can use:
    - OR - Broadens search by capturing synonyms or variant spellings of a concept.
    - Brackets/Parentheses ( ) - Gather OR'd synonyms of a concept together, while combining them with another concept.

- o Quotation marks — ‖ - Narrow the search by finding words together as a phrase, instead of separately.
  - o Site - limits the search to results from a specific domain or website.
  - o File type - limits the search to results with a specific file extension one could look for pdf's, PowerPoint presentations, Excel spreadsheets, and so on.
- The Search Tools button at the top of the Google results gives you a variety of other options, such as limiting the results by date.
- To find the best resources on a topic, one should search in academic databases, in addition to Google.

Databases provide access to journal articles and conference proceedings, as well as other scholarly resources.

- One gets more relevant and focused results, because they have better quality control and search functionality. One should choose a database based on subject area, date coverage, and publication type. Interfaces vary between databases, but the search techniques remain essentially the same.

EFFECTIVE SEARCH: THE WAY FORWARD

- A scholarly publication is one wherein the published outcome is authored by researchers in a specific field of skill. Such work cites all source contents used and is generally peer reviewed for accuracy and validity before publication.

- Essentially, the audience for such works is fellow experts and students in the field. The content is typically more complex and advanced than those found in general magazines.

- While most of the engineering researchers need to refer articles that appear in scholarly journals, books or other peer-reviewed sources, there is also a substantially useful content in more popular publications. These are informal in approach and aim to reach a large number of readers including both the experts in the field and also amateurs, but the content focuses on news and trends in the field.

- Research outcomes are not typically first disseminated here but are usually meant for general reading. A researcher should use all search tools for comprehensive search.

- A researcher must consider what type of information is needed, and where it could be found. Not all information is available online. Some information is only available in print.

- It can take time for scholarly and peer-reviewed information to be published. One might not be able to find scholarly information about something currently being reported in the news. The information may not be available, or studies on a topic of interest to the researcher have not occurred.

- Searching is an iterative process:
    - Experiment with different keywords and operators ○ Evaluate and assess results, use filters ○ Modify the search as needed; and

- o When relevant articles are found, look at their citations and references.

- After the search is complete, the researcher needs to engage in critical and thorough reading, making observation of the salient points in those sources, and summarize the findings.

- A detailed comparison and contrast of the findings is also required to be done.

- This entire process may be needed to be done multiple times.

- The conclusion of the entire process of literature survey includes a summary of the relevant and important work done, and also the identification of the missing links and the challenges in the open problems in the area under study.

- One must note that the literature survey is a continuous and cyclical process that may involve the researcher going back and forth till the end of the research project.

- It is very important to not lose sight of the purpose of an extensive search or literature survey, for it is possible to spend a very significant amount of one's time doing so and actually falsely think that one is working hard.

- Nothing will come of it unless one is an active reader and spends sufficient time to develop one's own ideas build on what one has read.

- It is not as if literature survey ends and then research begins, for new literature keeps appearing, and as one's understanding of the problem grows, one finds new connections and related/evolving problems which may need more search.

INTRODUCTION TO TECHNICAL READING

- It is obvious that the number of papers relevant to a particular researcher is very few, compared to the actual number of research papers available from peer-reviewed technical sources.

- It is also important to know where to read from; relying on refereed journals and books published by reputed publishers is always better than relying on easily available random articles off the web.

- While reading an engineering research paper, the goal is to understand the technical contributions that the authors are making. Given the abundance of journal articles, it is useful to adopt a quick, purposeful, and useful way of reading these manuscripts.

  It is not the same as reading a newspaper. It may require rereading the paper multiple times and one might expect to spend many hours reading the paper.

- Amount of time to be spent will get ascertained after an initial skimming through the paper to decide whether it is worth careful reading.

- There will also be papers where it is not worth reading all the details in the first instance. It is quite possible that the details are of limited value, or simply one does not feel competent to understand the information yet.

- Start out the skimming process by reading the title and keywords (these are anyways; probably what caught the initial attention in the first place). If on reading these, it does not sufficiently seem to be interesting; it is better to stop reading and look for something else to read.

- One should then read the abstract to get an overview of the paper in minimum time. Again, if it does not seem sufficiently important to the field of study, one should stop reading further.

- If the abstract is of interest, one should skip most of the paper and go straight to the conclusions to find if the paper is relevant to the intended purpose, and if so, then one should read the figures, tables, and the captions therein, because these would not take much time but would provide a broad enough idea as to what was done in the paper.

- If the paper has continued to be of interest so far, then one is now ready to delve into the Introduction section to know the background information about the work and also to ascertain why the authors did that particular study and in what ways the paper furthers the state of the art.

- The next sections to read are the Results and Discussion sections which is really the heart of the paper. One should really read further sections like the Experimental Setup/Modeling, etc., only if one is really interested and wishes to understand exactly what was done to better understand the meaning of the data and its interpretation.

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- A researcher will always need to be searching for the relevant literature and keeping up to date with it. If one is busy with a small project, the advisor might just give a single important paper to read. But with a larger one, you will be searching for one's own literature to read. For this one will need a strategy as there is just too much work out there to read everything.

CONCEPTUALIZING RESEARCH

- The characteristics of a research objective are that it must have new knowledge at the center and that it must be accepted by the community of other researchers and recognized as significant.

- Besides being original and significant, a good research problem should also be solvable or achievable. This requirement already asks us to think about the method and the tools that could be used to obtain that new knowledge.

- Now, the significance and the originality and all the theory that we read and tools and methods that we need to take on a problem, all of these normally come from the existing recorded literature and knowledge in the field.

- Coming up with a good research objective, conceptualizing the research that meets all of these requirements is a tough thing to do. It means that one must already be aware of what is in the literature. That is, by the time one actually has a good research objective, one is probably already an expert at the edge of knowledge else it is difficult to say with confidence that one has a good research objective.

- So, when working at the research (Ph.D) level, one needs to be prepared to become that expert, one needs to be continually reading the literature so as to bring together the three parts:

  o Significant problem, o The knowledge that will

  address it, and o A possible way to make that new

  knowledge.

- How these three aspects would come together will be different for every person doing research and it will be different in every field, but the only way to be that expert is by immersing oneself in the literature and knowing about what already exists in the field.

- However, if one is working on a research project that is of a smaller scope, then conceptualizing the research is possibly too tough to do, and one does not have the time that it takes to become that expert at the edge of knowledge.

- In this case, the researcher needs the help of someone else, typically the supervisor who may already be an expert and an active researcher in that field, and may advise on what a good research objective might be.

  An established researcher in any field should be able to immediately point to the landmark literature that one should read first. Otherwise one would need to spend a lot of time reading the literature to discover.

CRITICAL AND CREATIVE READING

- Reading a research paper is a critical process. The reader should not be under the assumption that reported results or arguments are correct. Rather, being suspicious and asking appropriate questions is in fact a good thing.

- Have the authors attempted to solve the right problem? Are there simpler solutions that have not been considered? What are the limitations (both stated and ignored) of the solution and are there any missing links? Are the assumptions that were made reasonable? Is there a logical flow to the paper or is there a flaw in the reasoning? These need to be ascertained apart from the relevance and the importance of the work, by careful reading.

- Use of judgmental approach and boldness to make judgments is needed while reading.

- Flexibility to discard previous erroneous judgments is also critical.

- Additionally, it is important to ascertain whether the data presented in the paper is right data to substantiate the argument that was made in the paper and whether the data was gathered and interpreted in a correct manner.

- Critical reading is relatively easy. It is relatively easier to critically read to find the mistakes than to read it so as to find the good ideas in the paper. Anyone who has been a regular reviewer of journal articles would agree to such a statement.

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- Reading creatively is harder, and requires a positive approach in search. In creative reading, the idea is to actively look for other applications, interesting generalizations, or extended work which the authors might have missed? Are there plausible modifications that may throw up important practical challenges? One might be able to decipher properly if one would like to start researching an extended part of this work, and what should be the immediate next aspect to focus upon.

TAKING NOTES WHILE READING

- A researcher reads to write and writes well only if the reading skills are good.
- The bridge between reading and actually writing a paper is the act of taking notes during and shortly after the process of reading.
- There is a well-known saying that the faintest writing is better than the best memory, and it applies to researchers who need to read and build on that knowledge to write building on the notes taken.
- Many researchers take notes on the margins of their copies of papers or even digitally on an article aggregator tool.
- In each research paper, there are a lot of things that one might like to highlight for later use such as definitions, explanations, and concepts.
- If there are questions of criticisms, these need to be written down so as to avoid being forgotten later on. Such efforts pay significantly when one has to go back and reread the same content after a long time.
- On completing a thorough reading, a good technical reading should end with a summary of the paper in a few sentences describing the contributions.
- But to elucidate the technical merit, the paper needs to be looked at from comparative perspective with respect to existing works in that specific area.
- A thorough reading should bring out whether there are new ideas in the paper, or if existing ideas were implemented through experiments or in a new application, or if different existing ideas were brought together under a novel framework.

- Obviously, the type of contribution a paper is actually making can be determined better by having read other papers in the area.

READING MATHEMATICS AND ALGORITHMS

- Mathematics is often the foundation of new advances, for evolution and development of engineering research and practice. An engineering researcher generally cannot avoid mathematical derivations or proofs as part of research work.
- In fact, these are the heart of any technical paper. Therefore, one should avoid skimming them.

  By meticulous reading of the proofs or algorithms, after having identified the relevance of the paper, one can develop sound understanding about the problem that the authors have attempted to solve.

- Implementation of an intricate algorithm in programming languages such as C, C++ or Java is prone to errors.
- And even if the researcher is confident about the paper in hand, and thinks that the algorithm will work, there is a fair chance that it will not work at all. So one may wish to code it quickly to check if it actually works.

READING A DATASHEET

- Researchers in different fields of engineering will need to read certain types of documents. For example, mechanical and civil engineers would need to read drawings related to mechanical parts and buildings. Researchers in the field of electronics need to read datasheets.
- On occasions, researchers in other fields may also need to incorporate a certain electronic part in which case careful reading of the datasheet is imperative.
- The same principles like initial skimming of the datasheet are required to ascertain whether further careful reading is needed.
- Datasheets are instruction manuals for electronic components, which (hopefully) details what a component does and how one may use it. Datasheets enable a researcher (or a working professional) to design a circuit or debug any given circuit with that component.

- The first page of the datasheet usually summarizes a part's function and features, basic specifications, and usually provides a functional block diagram with the internal functions of the part.

- A pin out provides the physical location of a part's pins, with special mark for pin 1 so that the part can be correctly plugged into the circuit. Some parts also provide graphs showing performance versus various criteria (supply voltage, temperature, etc.), and safe region for reliable operation which should be carefully read and noted by the researcher.

- One should be also in the lookout for truth tables which describe what sort of inputs provide what types of outputs, and also timing diagrams which lay out how and at what speed data is sent and received from the part.

Datasheets usually end with accurate dimensions of the packages a part is available in. This is useful for printed circuit board (PCB) layout. When working with a new part, or when deciding which part to use in the research work, it is recommended to carefully read that part's datasheet to come up with a bit of shortcut that may potentially save many hours later on.

ATTRIBUTES AND CITATION: Giving credits wherever due

- Academic writing, by definition, must follow certain rules and conventions.
- Among the most important of these are the rules and conventions about citing, referencing, attributing, and acknowledging the works of others.
- That means giving proper credit wherever due.
- Citing is the practice of quoting from, referring to other authors' works and ideas in the text of our work in such a way that the context is clear to the reader.
- Referencing is the listing of the full publication details of a published work that is cited so as to give background information to the readers.
- Acknowledgment in research publications indicates contributions to scientific work.
- However, acknowledgment, attributions, and citations differ in the manner of their application.

CITATIONS: FUNCTIONS AND ATTRIBUTES

- Citations (references) credit others for their work, while allowing the readers to trace the source publication if needed.
- Any portion of someone else's work or ideas in papers, patents, or presentations must be used in any new document only by clearly citing the source.
- This applies to all forms of written sources in the form of texts, images, sounds, etc. and failure to do may be considered plagiarism
- When a bibliography of previously published patents or papers is placed in the new works of a researcher, a connection is established between the new and previous work.
- As per relevance to context, the researcher provides due credit through the use of a citation.

Citations help the readers to verify the quality and importance of the new work and justification of the findings. It is a way to tell readers that certain material in the researcher's present work has come from another source and as an ethical responsibility; appropriate credit has been given to the original author or writer.

- Materials that can be cited include journal papers, conference proceeding, books, theses, newspaper articles, websites, or other online resources and personal communication.

- Preferably, citations should be given at the end of a sentence or the end of a paragraph as can be seen even in this particular paragraph. Citation must contain enough details so that readers can easily find the referenced material.

- A researcher needs to cite each source twice:

  (i) in-text citation, in the text of the article exactly where the source is quoted or paraphrased, and

  (ii) a second time in the references, typically at the end of the chapter or a book or at the end of a research article

- LaTeX, a document preparation system often used by engineering researchers to automatically format documents that comply with standard formatting needs, is very effective to track and update citations

- There are three main functions of citation:

  (i) **Verification function**: Authors have a scope for finding intentional or unintentional distortion of research or misleading statements. Citation offers the readers a chance to ascertain if the original source is justified or not, and if that assertion is properly described in the present work

  (ii) **Acknowledgment function**: Researchers primarily receive credit for their work through citations. Citations play crucial role in promotion of individual researchers and their continued employment. Many reputed organizations and institutes provide research funding based on the reputations of the researchers. Citations help all researchers to enhance their reputation and provide detailed background of the research work.

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      (iii)   **Documentation function**: Citations are also used to document scientific concepts and historical progress of any particular technology over the years

Citations are the currency that authors would wish to accumulate and the technical community gives them credit for these contributions. When other authors make citations, they honor those who initiated the ideas

- Authors should cite sources to indicate significance of the work to the reader. Relevant citations help authors develop an easily understandable argument and prevent the need to navigate through work irrelevant to the reader's interest areas

- There are certain cases when references do not fulfill the actual goal of citations and acknowledgments, and thus do not benefit the reader.

  o Spurious citations: In certain cases, when citation is not required or an appropriate one is not found, if the author nevertheless goes ahead with including one anyways, it would be considered as a spurious citation

  o Biased citations: When authors cite the work of their friends or colleagues despite there being no significant connection between the two works, or when they do not cite work of genuine significance because they do not wish to give credit in the form of citation to certain individuals, then such actions can be classified as biased citations.

  o Self-citations: There is nothing wrong in citing one's prior work if the citation is really relevant. Self-citation of prior papers is natural because the latest paper is often a part of a larger research project which is ongoing

  o Coercive citations: Despite shortcomings, impact factors remain a primary method of quantification of research. One side effect is that it creates an incentive for editors to indulge in coercion to add citations to the editor's journal

IMPACT OF TITLES AND KEYWORDS ON CITATION

- The citation rate of any research paper depends on various factors including significance and availability of the journal, publication types, research area, and importance of the published research work.

- Other factors like length of the title, type of the title, and selected keywords also impact the citation count. Title is the most important attribute of any research paper.
- It is the main indication of the research area or subject and is used by researcher as a source of information during literature survey.
 Title plays important role in marketing and makes research papers traceable.
- A good title is informative, represents a paper effectively to readers, and gains their attention. Some titles are informative but do not capture attention of readers, some titles are attractive but not informative or related to the readers' research area.
- The download count and citation of a research paper might be influenced by title.
- There are three different aspects which provide a particular behavior to the title:
  o Types of the title, o Length of
  the title, and o Presence of
  specific markers
- Longer titles mainly include the study methodology and/or results in more detail, and so attract more attention and citations
- In general, titles containing a question mark, colon, and reference to a specific geographical region are associated with lower citation rates, also result-describing titles usually get citations than method-describing titles.
- Additionally, review articles and original articles usually receive more citations than short communication articles.
- At least two keywords in the title can increase the chance of finding and reading the article as well as get more citations.
- Keywords represent essential information as well as main content of the article, which are relevant to the area of research. Search engines, journal, digital libraries, and indexing services use keywords for categorization of the research topic and to direct the work to the relevant audience.

KNOWLEDGE FLOW THROUGH CITATION

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- Knowledge flows through verbal communications, books, documents, video, audio, and images, which plays a powerful role in research community in promoting the formulation of new knowledge.
- In engineering research, knowledge flow is primarily in the form of books, thesis, articles, patents, and reports. Citing a source is important for transmission of knowledge from previous work to an innovation

  Knowledge flow happens between co-authors during research collaboration, among other researchers through their paper citation network, and also between institutions, departments, research fields or topics, and elements of research
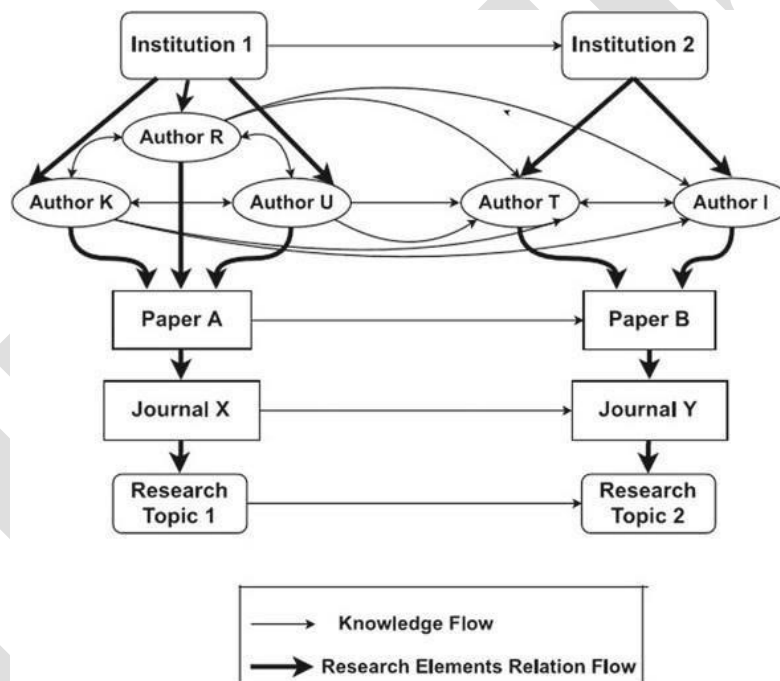
- If paper A is cited by paper B, then knowledge flows through citation networks across institutions.
- The complex interdisciplinary nature of research encourages scholars to cooperate with each other to grab more advantages through collaboration, thereby improving quality of the research

- The below figure shows a relationship between co-authorship and different types of citations. Three articles (X, Y, and Z) and five references (X1, X2, X3, Y1, and Y2) of article X and Y, respectively, are considered. A, B, and C are authors of article X, and D, E, F, G, and also A are authors of article Y. Article Z has two authors H and E. References X1, X2, X3, Y1, and Y2 have authors (A, P), (H, R), (D), (Q, B, F), and (R), respectively.
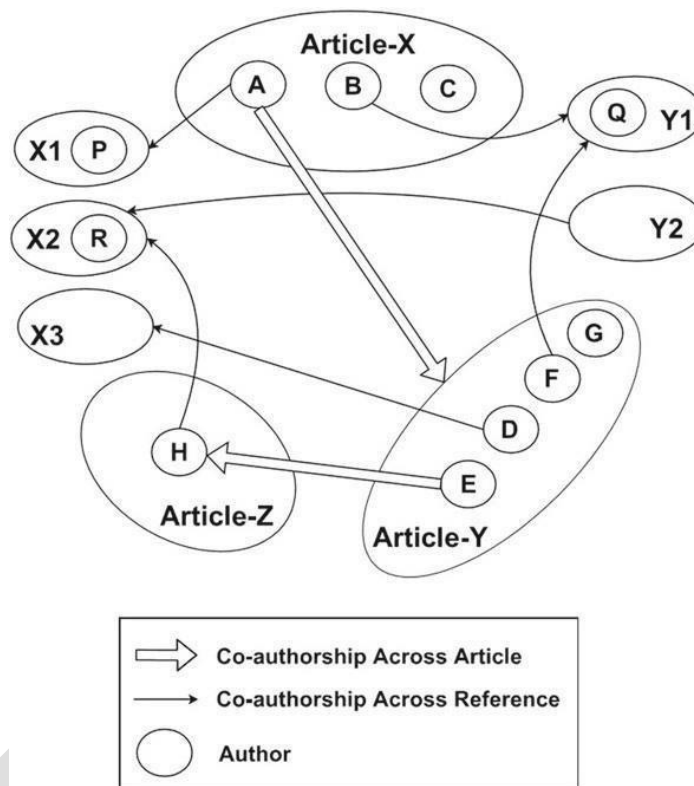
CITING DATASETS

- The nature of engineering research has evolved rapidly and now relies heavily on data to justify claims and provide experimental evidences and so data citations must fetch proper credit to the creator of the dataset as citations of other objects like research articles.

- Data citations should have provisions to give credit and legal attribution to all contributors, enable identification and access, while recognizing that a specific style may not apply to all data.

- Ascertaining the ownership of data can be a complicated issue especially with large datasets, and issues of funding can also make it a difficult matter.

- A researcher should obtain necessary permission for using data from a particular source.

- Citations related to datasets should include enough information so that a reader could find the same dataset again in the future, even if the link provided no longer works.

- It is proper to include a mixture of general and specific information to enable a reader to be certain that the search result is the same dataset that was sought.

> Examples:
>
> 1. Historical Data, Sotavento (Wind Farm), Corunna, Spain (July 2016): [Accessed: 4 Oct.] 2016] Retrieved from http://www.sotaventogalicia.com/en/real-time-data/historical
> 2. Deb, D (2016). [Personnel survey]. Unpublished raw data.

STYLES FOR CITATION

- Citation styles differ primarily in the order, and syntax of information about references, depending on difference in priorities attributed to concision, readability, dates, authors, and publications.
- Some of the most common styles for citation

  ASCE style (American Society of Civil Engineers)

> Template for books:
> Author Surname, Author Initial. (Year Published). Title. Publisher, City, Pages Used.
>
> Example:
> Wearstler, K., and Bogart, J. (2004). Modern glamour. Regan Books, NY.
>
> Template for websites:
> Author Credentials / Company Name (Year Published). 'Title'. http://Website URL (Oct. 10, 2013).
>
> Example:
> Blade cleaning services (2015): http://www.bladecleaning.com/problematica (29 Oct, 2016).

> Template for journal publications:
> Author Surname, Author Initial. (Year Published). 'Title'. Publication Title, Volume number(Issue number), Pages Used.
>
> Example:
> Johnston, L. (2014). "How an Inconvenient Truth Expanded The Climate Change Dialogue abd Reignited An Ethical Purpose in The United States". 1–160.

IEEE style (Institute of Electrical and Electronics Engineers

Chapter in an edited book
[1] A. Rezi and M. Allam, "Techniques in array processing by means of transformations," in Control and Dynamic Systems, Vol. 69, Multidimensional Systems, C. T. Leondes, Ed. San Diego: Academic Press, 1995, pp. 133–180.

ACKNOWLEDGMENT AND ATTRIBUTION

- Acknowledgment section is a place to provide a brief appreciation of the contribution of someone or an organization or funding body to the present work.

- If no particular guideline is available for the intended publication, then it can be introduced at the end of the text or as a footnote.

- Acknowledgment is a common practice to recognize persons or agencies for being responsible in some form or other for completion of a publishable research outcome.

- Acknowledgment displays a relationship among people, agencies, institutions, and research. In some case, certain individuals may help in the research work but may not deserve to be included as authors. As a sign of gratitude, such contributions should be acknowledged

- Acknowledgments and attributions are also very important in the publications of journal or conference papers. Giving proper credit wherever it is due is very important and even if the contribution is minor, it should not be neglected.

- In engineering research, acknowledgments are meant for participating technicians, students, funding agency, grant number, institution, or anyone who provide scientific inputs, shared unpublished results, provided equipment, or participated in discussions.

WHAT SHOULD BE ACKNOWLEDGED

- Every author should know that what should/should not be acknowledged.

- Author should acknowledge quotation, ideas, facts, paraphrasing, funding organization, oral discussion or support, laboratory, and computer work.

- Quotation: In technical writing such as in the field of engineering, quotes are used very rarely. Quotations are of two types:

- o Direct quotations are used when author use actual words or sentences in the same order as the original one. Author should use quotation marks for the words or sentences with proper acknowledgment.
- o Indirect quotation summarizes or paraphrases the actual quote. In such cases, it is important to acknowledge with proper name and date.

□

Authors should acknowledge people who give appropriate contribution in their research work. Non-research work contributions are not generally acknowledged in a scientific paper but it may be in a thesis. Persons must be acknowledged by authors, who gave a scientific or technical guidance, take part in some discussions, or shared information to author. Authors should acknowledge assistants, students, or technicians, who helped experimentally and theoretically during the research work.

- If the researcher received grant from a funding agency and if those funds were used in the work reported in the publication, then such support should always be acknowledged by providing full details of the funding program and grant number in the acknowledgment section. The authors should also gratefully acknowledge use of the services and facilities of any center or organization with which they are not formally affiliated to. □ An example of acknowledgment of grant received is as follows:

- Many technical journals explicitly discourage authors to thank the reviewers in their article submissions. This could be construed as favoritism or an attempt to encourage reviewers to accept their manuscript for reasons other than scientific merit.

- Acknowledging that results have been presented elsewhere: If the results were presented as an abstract in a journal, then there should be a suitable citation. If the results were presented as part of scientific meeting, symposium, or other gathering, then some relevant information should be provided.

- At the very least, the name of the gathering and year should be cited. Other helpful items include the location of the gathering (city and state or country) and the full date of the occasion.

⬜

- By acknowledging all help received in one's research work, the author(s) demonstrate integrity as a researcher, which in turn encourages continued collaboration from those who helped out in different ways.

  Failure to acknowledge funding may result in the discontinuation of current funding and/or ineligibility to receive future funding for a certain number of years or indefinitely.

ACKNOWLEDGEMENTS IN BOOKS / DISSERTATION

- A page of acknowledgments is usually included at the beginning of a thesis/ dissertation immediately following the table of contents.
- These acknowledgments are longer than the one or two sentence statements in journal papers or articles in conference proceedings.
- These detailed acknowledgments enable the researcher to thank all those who have contributed in completion of the research work. Careful thought needs to be given concerning those whose inputs are to be acknowledged and in what order.
- Generally, one should express appreciation in a concise manner and avoid emotive language.
- The following are often acknowledged in these types of acknowledgments: main supervisor, second supervisor, peers in the lab, other academic staff in the department, technical or support staff in the department, colleagues from other departments, other institutions, or organizations, former students, family, and friends

> **Sample Acknowledgement in Thesis:**
> I wish to express my sincere appreciation to my supervisor Prof. Gang Tao for the useful comments, remarks and encouragement throughout this thesis work. Furthermore, I wish to express my thanks to Prof. Jacob Hammer for introducing me to the topic and for the support along the way. Also, I like to thank my peers in the Adaptive Control Lab such as Yu Liu and Shanshan Li, who have shared their precious time during many lively technical discussions. I would like to thank my family members who have supported me throughout this journey in many different ways.

DEDICATION OR ACKNOWLEDGEMENTS

- Dedication is almost never used in a journal paper, an article in conference proceedings, or a patent, and it is used exclusively in larger documents like books, thesis, or dissertations. While acknowledgments are reserved for those who helped out with the book in some way or another (editing, moral support, etc), a dedication is to whomever the author would like it to be dedicated to, whether it is the author's mother, the best friend, the pet dog, or Almighty God. And yes, it is possible to dedicate something to someone while also mentioning them in the acknowledgments.

- For example, one may dedicate a book to one's spouse, but acknowledge them for being the moral support and putting up with when one gets stressed.

- The acknowledgments in technical books can be sometimes as brief as the ones in journal articles.

- The acknowledgment section of a technical report may be a paragraph that is longer than a journal paper but shorter than dissertations.

- Generally, the length of the acknowledgment may have some correlation with the length of the document.