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Research Informed teaching

Capstone Seminar Workshop 1 – Proposal Stage

Literature Review

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Outline

- What is literature review?
- Why is literature review needed?
- Where is literature review positioned in the context?
- How can we write a good literature review? Examples.

What is literature?

A collection of (scholarly) writing on your selected topic.

- Journals
- Conferences
- Books
- Dissertations
- Theses
- websites
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What is literature review?

- LR is a part of academic writing presenting knowledge and understanding of the academic literature on a specific topic in your selected context.
- LR is a **CRITICAL** evaluation of the established works;
- LR is not a literature report or summary.
- LR demonstrates what you have learnt from others as a starting point for YOUR new ideas. Your project should/must be connected to, extended from, or integrated to the prior work shown in LR.

Where: Different types of literature review

Explicit forms:

- in a literature review section;
- in a long / comprehensive review, e.g. review papers
 - A thesis or dissertation usually has a chapter for literature review
- in a short / comprehensive review; several paragraphs in journal/conference papers

Implicit forms:

- there is no individual section for literature review, but in the other forms.
- in a short / comprehensive review; Journal articles or conference papers may not have a section of literature review, but usually in introduction section.

Why & how: The Purposes

1. Summarize and analyze established research: theories & applications; (Why your selected topic is so interested? You have to choose your selected LR references carefully!)
2. Identify areas of controversy topics;
3. Identify particular gaps to highlight the values of your study. What is your motivation for your new ideas?

How: Examples

1. C. Guan, K.K.F. Yuen, F. Coenen, Particle swarm Optimized Density-based Clustering and Classification: Supervised and unsupervised learning approaches, Swarm and Evolutionary Computation, Volume 44, 2019, Pages 876-896, <https://doi.org/10.1016/j.swevo.2018.09.008> .
2. Chun Guan, “Evolutionary and Swarm Algorithm Optimized Density-Based Clustering and Classification for Data Analytics”, University of Liverpool, PhD thesis, 2018 <https://livrepository.liverpool.ac.uk/3021212/>
3. Koczkodaj W.W., Mikhailov, L., Redlarski, G., Soltys, M., Szybowski, J., Tamazian, G., Wajch, E., Yuen K.K.F. (2016) Important Facts and Observations about Pairwise Comparisons, Fundamenta Informaticae, 144, pp.1-17. <https://doi.org/10.3233/FI-2016-1336>
4. K.K.F. Yuen, Analytic hierarchy prioritization process in the AHP application development: A prioritization operator selection approach, Applied Soft Computing, Volume 10, Issue 4, 2010, <https://doi.org/10.1016/j.asoc.2009.08.041>.
5. Yuen K.K.F. (2014), “Fuzzy Cognitive Network Process: Comparison with Fuzzy Analytic Hierarchy Process in New Product Development Strategy”, IEEE Transactions on Fuzzy Systems, 22(3), pp.597-610. <http://dx.doi.org/10.1109/TFUZZ.2013.2269150>
6. Yuen KKF (2012), “The pairwise opposite matrix and its cognitive prioritization operators: the ideal alternatives of the pairwise reciprocal matrix and analytic prioritization operators”, Journal of the Operational Research Society, 63, 322-338. <https://doi.org/10.1057/jors.2011.33>
7. Yuen, K.K.F. (2009) “Cognitive network process with fuzzy soft computing technique in collective decision aiding”, The Hong Kong Polytechnic University, PhD thesis. <http://hdl.handle.net/10397/85185>

How: Examples

1. L. H. Garcia Paucar, N. Bencomo. K.K.F. Yuen, ARRoW: Automatic Runtime Reappraisal of Weights for Self-Adaptation, The 34th ACM/SIGAPP Symposium On Applied Computing (SAC2019), pp. 1584-1591.
<https://doi.org/10.1145/3297280.3299743>
2. L. H. Garcia Paucar, Requirements-aware Models to Support Better Informed Decision-making for Self-adaptation using Partially Observable Markov Decision Processes, University of Aston, PhD thesis,
https://publications.aston.ac.uk/id/eprint/41929/1/GARCIA_PAUCAR_LUIS_HERNAN_159211456_2019.pdf

Publications with undergraduate students

Hu Q., Yuen K. K. F. and Craig P., "Towards a recommendation approach for university program selection using **Primitive Cognitive Network Process**," 2017 International Conference on Service Systems and Service Management, 2017, pp. 1-4 (Year 2 undergraduate students)

Di Y., Yuen K.K.F, (2017). Towards an **MCDM-based evaluation framework** for **regression algorithms**, 2017 IEEE International Conference on Smart Computing, pp.1-3. (Year 4 student).

Chen, V.Q. and Yuen K.K.F., (2015) "Toward a Hybrid Approach of **Primitive Cognitive Network Process** and **Self-Organizing Map** for **Computer Product Recommendation**", IEEE international conference on Intelligent Computing and Internet of Things, pp.9-12. (*Year 4 Undergraduate Student*)

Su, J.S., and Yuen, K.K.F., (2014), "Towards A Hybrid Approach of **Primitive Cognitive Network Process** and **Weighted Iterative Dichotomiser 3** for **Customer E-payment Adoption Analysis**", 2014 7th IEEE Joint International Information Technology and Artificial Intelligence Conference, pp.218-222. (*Year 3 Undergraduate Student*)

Zhou, N.Y., and Yuen, K.K.F., (2014), "Towards A Hybrid Approach of **Primitive Cognitive Network Process** and **Fuzzy Cognitive Map** for **Box Office Analysis**", Proceedings of 2014 IEEE International Conference on Fuzzy Systems, in 2014 IEEE World Congress on Computational Intelligence, pp.1094-1053. (*Year 3 Student, who awarded IEEE WCCI 2014 Outstanding Student Paper Travel Grant, USD\$400*).

Zhang, G., and Yuen, K.K.F., (2013) "Toward A Hybrid Approach of **Primitive Cognitive Network Process** and **Particle Swarm Optimization Neural Network** for **Forecasting**", The First International Conference on Information Technology and Quantitative Management, Procedia Computer Science, Vol.17, (Elsevier), pp.441–448. (*Year 4 Student*)

Conclusion: Key points to remember

- It is not a descriptive list.
- It is not a book by book and article by article summary.
- It is not a survey of every single thing that's ever been written about your topic.
- It must be defined by a guiding concept i.e. essay question, research project or objective.
- It must tell the reader what knowledge and ideas have been established and agreed in your area and outline their strengths and weaknesses.

<https://www.rlf.org.uk/resources/key-points-to-remember/>

End
Thank you