

Research Methods - Tutorial 2

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September 2025

1 Introduction

This document is a sample solution for Tutorial Exercise 2. Its brief is available as a PDF on our Moodle page.

2 Literature Research

When writing your literature review and final project dissertation, base your work mostly on recent peer-reviewed references, as these are reliable sources. For example, when writing a literature review about Evolutionary Algorithms (EA) applied to Machine Learning (ML), reading the Wikipedia page about EA [1] or a blog [2] could help you start understanding the basics and give you some pointers to peer-reviewed references. However, you should not cite such web pages because they lack editorial oversight and quality control, as nonexperts may contribute content and cannot be verified for accuracy. In other words, these are not peer-reviewed sources. Textbooks [3] can provide a good foundation in knowledge and context, but be cautious about citing older editions, as the field evolves rapidly. Additionally, not all textbooks undergo the same rigorous peer-review process as journal articles. Always prioritise citing recent peer-reviewed papers, particularly primary sources that report original research. Secondary sources, such as survey [4] or review papers, are valuable for understanding the broader context, as they synthesise existing research to help identify key themes and primary sources. However, secondary research citations should complement, not replace, primary ones. For example, while Banzhaf et al. [4] investigate the role of EA in solving different ML challenges, Zhang, Sun, Wang, et al. Zhang et al. [5] propose a new generator of optimisation benchmark problems for EA. ArXiv preprints can provide

access to recent developments [6], but should be used cautiously and kept to a minimum, as they're not peer-reviewed. Always prioritise peer-reviewed sources as the foundation of your literature review. ArXiv papers may be appropriate only when they represent genuinely influential work with no peer-reviewed equivalent, but ensure they don't dominate your references.

References

- [1] Wikipedia contributors. "Evolutionary algorithm." Accessed: 2025-09-15. [Online]. Available: https://en.wikipedia.org/wiki/Evolutionary_algorithm.
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- [3] K. De Jong, *Evolutionary Computation: A Unified Approach* (A Bradford book). MIT Press, 2006, ISBN: 9780262041942. [Online]. Available: <https://books.google.ie/books?id=1Yn6AQAQBAJ>.
- [4] W. Banzhaf, P. Machado, and M. Zhang, *Handbook of Evolutionary Machine Learning* (Genetic and Evolutionary Computation). Springer Nature Singapore, 2023, ISBN: 9789819938148. [Online]. Available: <https://books.google.ie/books?id=40TgEAAAQBAJ>.
- [5] B. Zhang, F. Sun, L. Wang, and B. Yang, "Improving controllability of chaotic landscape generators by property evolution," in

2025 IEEE Congress on Evolutionary Computation (CEC), 2025, pp. 1–8. DOI: 10.1109/CEC65147.2025.11043120.

- [6] A. Novikov et al., *Alphaevolve: A coding agent for scientific and algorithmic discovery*, 2025. arXiv: 2506.13131 [cs.AI]. [Online]. Available: <https://arxiv.org/abs/2506.13131>.