(Animal) Life-Cycle Algorithm*

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Abstract. This paper is a proposal for a nature-inspired algorithm that seeks to solve the basic GA problem OneMax. This is a distributed algorithm in all its conception, where the idea is that its mechanism can operate from different containers (or equipment) independently, eliminating waiting times between processes. This algorithm emphasizes the use of cloud computing available resources.
Its mechanism is composed of birth, growth, reproduction, and death, where each one of them works concurrently and asynchronously on a population that evolves constantly. This strategy takes a similar focus as the study of bacteria growth in microbiology, where using a microscope, we can observe and analyze the evolution of a population over time.
This implementation also can be useful, as an introductory example to the native cloud computing programming, inspired by the GA algorithm operation mechanics. One difference from the GA is in the reproduction mechanism, which is flexible to work in parallel with several strategies simultaneously, for example, tourney selection, random selection of couples in the population, and couple selection with a random mating individual outside of the population.

Keywords: First keyword · Second keyword · Another keyword.

1 First Section

1.1 A Subsection Sample

Please note that the first paragraph of a section or subsection is not indented. The first paragraph that follows a table, figure, equation etc. does not need an indent, either.

Subsequent paragraphs, however, are indented.

Sample Heading (Third Level) Only two levels of headings should be numbered. Lower level headings remain unnumbered; they are formatted as run-in headings.

* Supported by organization x.

Sample Heading (Fourth Level) The contribution should contain no more than four levels of headings. Table 1 gives a summary of all heading levels.

Table 1. Table captions should be placed above the tables.

Heading level	Example	Font size and style
Title (centered)	**Lecture Notes**	14 point, bold
1st-level heading	**1 Introduction**	12 point, bold
2nd-level heading	**2.1 Printing Area**	10 point, bold
3rd-level heading	**Run-in Heading in Bold.** Text follows	10 point, bold
4th-level heading	*Lowest Level Heading.* Text follows	10 point, italic

Displayed equations are centered and set on a separate line.

$$x + y = z \tag{1}$$

Please try to avoid rasterized images for line-art diagrams and schemas. Whenever possible, use vector graphics instead (see Fig. 1).

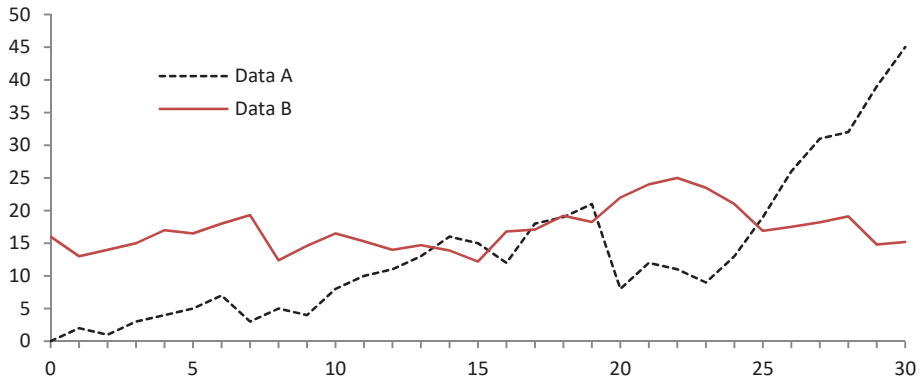

Fig. 1. A figure caption is always placed below the illustration. Please note that short captions are centered, while long ones are justified by the macro package automatically.

Theorem 1. *This is a sample theorem. The run-in heading is set in bold, while the following text appears in italics. Definitions, lemmas, propositions, and corollaries are styled the same way.*

Proof. Proofs, examples, and remarks have the initial word in italics, while the following text appears in normal font.

For citations of references, we prefer the use of square brackets and consecutive numbers. Citations using labels or the author/year convention are also acceptable. The following bibliography provides a sample reference list with entries

for journal articles [1], an LNCS chapter [2], a book [3], proceedings without editors [4], and a homepage [5]. Multiple citations are grouped [1–3], [1, 3–5].

References

1. Valdez, M.G., Guervós, J.J.M.: A container-based cloud-native architecture for the reproducible execution of multi-population optimization algorithms. Future Generation Computer Systems **116**, 234–252 (2021)
2. Valdez, M.G., Guervós, J.J.M.: A container-based cloud-native architecture for the reproducible execution of multi-population optimization algorithms. Future Generation Computer Systems **116**, 234–252 (2021)
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