

Automatic Machine Learning on Large Graphs

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Abstract. Graph Neural Network (GNN) is a powerful tool for processing graph structured data. In recent years, several attempts have been made to automatically design data-specific GNN architectures with the help of Neural Architecture Search (NAS). Although these efforts have achieved promising performance compared to hand-crafted ones like GCN and GAT, it is difficult to apply them on large graphs with millions of nodes and edges due to time and memory limit. In this paper, we first prove that a data-specific GNN architecture is necessary, then propose the NAS-LG (Neural Architecture Search on Large Graphs) framework, including a well-designed search space and an efficient NAS algorithm. Extensive experiments on Open Graph Benchmark (OGB) demonstrate that NAS-LG not only

The abstract should briefly summarize the contents of the paper in 150–250 words.

Keywords: First keyword · Second keyword · Another keyword.

1 Introduction

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.

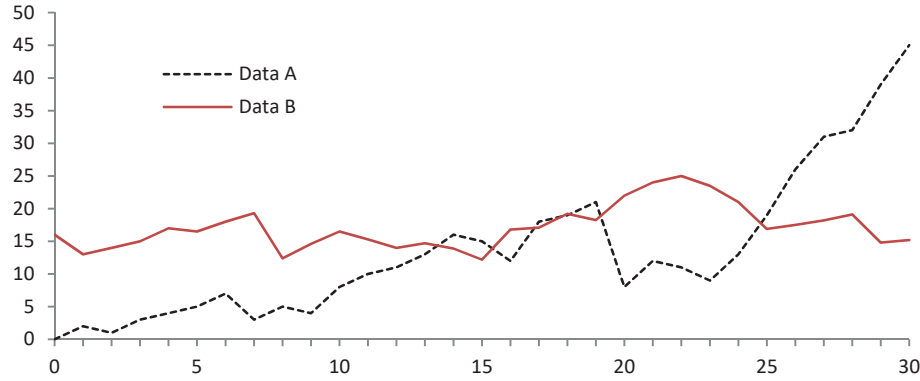
Sample Heading (Fourth Level) The contribution should contain no more than four levels of headings. Table 1 gives a summary of all heading levels. Displayed equations are centered and set on a separate line.

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

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

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 | <i>Lowest Level Heading.</i> Text follows | 10 point, italic |

**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

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