Bone Aging with Generative Adversarial Network*

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Abstract. Bone age assessment (BAA) based on hand x-ray is of great importance for diagnosing endocrine and metabolic disorders in child development. However, it is still hard to obtain the data of the same individual at different ages due to the radiation injury. In this work, we propose a new task called bone aging to generate hand x-ray at different ages for the same individual. Bone aging is of great importance for studying bone growth process and designing bone age assessment standards. Specifically, we design an encoder-decoder based generative adversarial network to achieve bone age editing with high resolution. In order to edit the bone age without changing the identity, we design an independent age modulation layer to manipulate features in the the latent space. Our model allows for continuous age editing on high resolution, which meets the demands of medical research on bone growth.

Keywords: First keyword · Second keyword · Another keyword.

1 Introduction

2 Method

datasets

network

3 Experiments and Results

4 Conclusion

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

* Supported by organization x.

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).

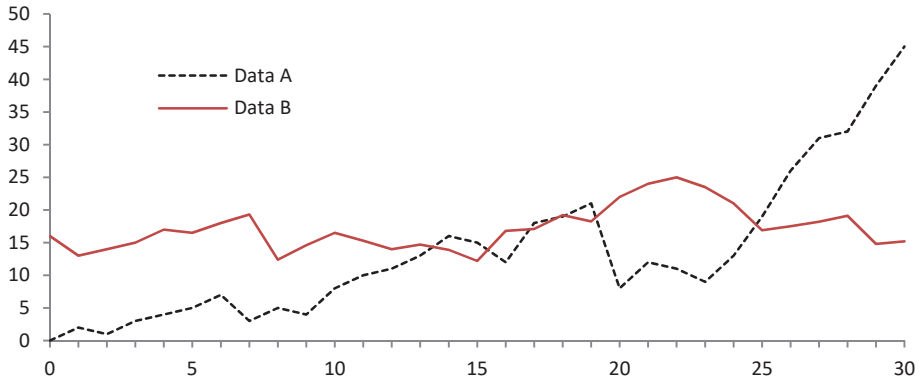

Fig. 1. A figure caption is always placed below the illustration. Please note that short captions are centered, while long ones are justified by the macro package automatically.

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

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