先端科学技術研究科　修士論文要旨

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論文題目	Statistical Analysis of Vertebral Alignment Using Large-scale CT Image Database 大規模CT画像データベースにおける脊椎アライメントの統計解析

要旨

The analysis of age-related variations in the alignment of human vertebrae is important. The identification of diseased vertebrae depends to a large extent on the establishment of standards for normal vertebrae. The construction of accurate models highly depends on the size of the dataset. However, medical image datasets are much smaller than those of natural images due to patient privacy issues. Recently, a cloud-based medical image database has been constructed in Japan for improving the promotion of medical imaging technology. In this large-scale database, a state-of-the-art method achieving both high vertebral localization rate and vertebrae segmentation accuracy was leveraged to analyze the age-related variations of human vertebrae. Additionally, we proposed an approach that can eliminate failure instances at the vertebral localization to help generate reliable age-related vertebral alignment models. In our study, 5600 CT cases out of about 20000 CT cases were selected for the automatic generation of vertebral alignment models from the vertebrae C1 to L5 of each age group (ranged between 40 to 80 years with 10 years intervals). This analysis would be helpful to establish an age group-based benchmark for studies on Japanese vertebral alignment.