

NIFTI FORMAT FOR USE IN MEDICAL IMAGE ANALYSIS

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ABSTRACT

Medical imaging plays a crucial role in the diagnosis and treatment of numerous conditions, allowing physicians to gain insights into the anatomical structures and physiological processes of the body. With the advancement of technology, the need for efficient methods of storing, processing, and analyzing medical images has become increasingly important. The NIfTI (Neuroimaging Informatics Technology Initiative) format has emerged as a standard way of representing image data, particularly in neuroimaging. This article presents the history of the NIfTI format, its applications, and case studies of its implementation. Introduced in 2004, the format was designed to facilitate data exchange between different platforms, simplify image data analysis, and provide flexibility in storing data from various imaging modalities. Its features, such as interoperability, flexibility, and openness, have contributed to its widespread use. Examples of the NIfTI format's utilization include the startup niftiVR and the FSL-MRS toolkit, which demonstrate its versatility and utility in both research and clinical practice. The conclusions highlight the importance of standardization and further development of the NIfTI format to meet the growing demands in the field of medical imaging.

Keywords: NIfTI, medical imaging, neuroimaging, virtual reality

INTRODUCTION

Medical imaging plays a crucial role in the diagnosis and treatment of many conditions, allowing physicians and researchers to gain insights into the anatomical structures and physiological processes of the body. With technological advancements, medical images have become increasingly sophisticated, necessitating efficient methods for storing, processing, and analyzing these images. In this context, the NIfTI (Neuroimaging Informatics Technology Initiative) format has emerged as a standard method for representing image data in the field of neuroimaging and beyond.

A file format dictates how image data is organized within a file and how that pixel data should be interpreted to correctly load and display the image using software. Understanding the NIfTI format and its potential can streamline the analysis of image data, leading to better diagnoses, improved therapies, and new discoveries in the field of medicine.