Reverse engineering of proprietary image data on the example of Impac / Lantis

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Introduction

The presented research deals with methods and tools for analyzing and decoding undocumented medical image data and its conversion into standard formats. As an example serves the widespread, previously inaccessible image data format Impac / Lantis.

Material and Methods

Specific expertise in the fields of computer science (image processing, data compression techniques) and mathematics (cryptanalysis, pattern analysis) was used to solve this problem of medical physics.

Results

In cooperation with the Kantonsspital Münsterlingen a successful conversion of a Impac / Lantis database of approximately 42,000 images (image data, metadata and annotations) was achieved. Image files so far only readable with the proprietary software are now stored in standard, longterm data formats (DICOM RT, TIF, XML , PDF) and can be accessed with standard software tools.

Discussion

The presentation gives an overview of the problem and shows the interplay of two different scientific disciplines to solve this problem. On examples it is shown by what methods unknown file formats can be analysed and a conversion be made available. Also, for legal reasons, it is interesting to mention that the reverse engineering can be performed without using manufacturer documents and without analysis of the program code, which is normally forbidden in the license contract.