Processing of three-dimensional medical data using computer vision methods following changes of the brain tumors in regular MRI examinations

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MOTIVATION
- saving valuable time of doctors
- automatization and simplification of the monotonous work

USAGE
- clinical practice: treatment planning diagnostics
- education

PREPROCESSING
GOAL: contrast and brightness adjustment
METHOD: based on the data scaling and histogram matching

RIGID REGISTRATION
GOAL: alignment of the fusions captured at the different examinations
METHOD: based on the keypoint detection, feature extraction and feature matching

RESULTS and CONCLUSION
Evaluation is based on the comparison of histogram correlation between input and registered data.

RIGID REGISTRATION
Different algorithms were evaluated on the dataset from practice.

NONRIGID REGISTRATION
Effect of the different modalities was evaluated on the BRATS dataset.

NONRIGID REGISTRATION
- image morphing
- visualization tool with 2D views and 3D model