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Rigid Motion Detection for Abrupt Motion in FDG Brain PET Imaging

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In this study, we employed a dedicated brain positron emission tomography (PET) scanner to simulate controlled motion through the use of a voxelised phantom. The resulting output was converted to listmode and subsequently transformed into pseudo-displacement time series via a moving mean technique. To locate time points of motion, we applied a statistical approach known as bottom-up segmentation, a form of change point detection. This facilitated the identification and separation of frames into motion-free segments. Bottom-Up Segmentation consistently detected spatial resolutions as fine as 2mm and identified motions of 3mm within intervals, up to, 6 seconds consistently.

Field

Software and quantification

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