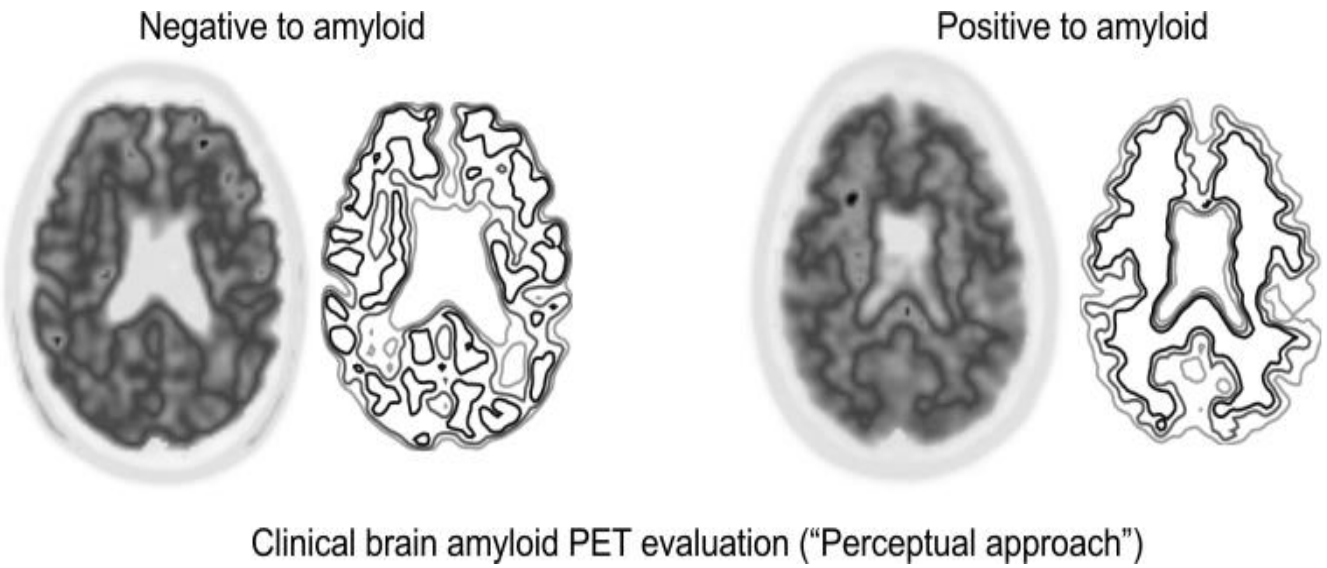
COMPUTER METHOD FOR 3-D IMAGES CLASSIFICATION



Clinical brain amyloid PET evaluation ("Perceptual approach")

PRIORITY NUMBER:

MI2014A001418

KEYWORDS:

Computer vision
Healthcare
Optimization
Monitoring
Digital Image Processing

Extracting salient and robust features from images may often be affected by scaling, normalization, and orientation problems; generality and performance are often compromised. Our analysis method for automatic characterization and classification on any n-D images is able to capture global properties by computing features from image isosurfaces offering suitable alternative to standard methods.

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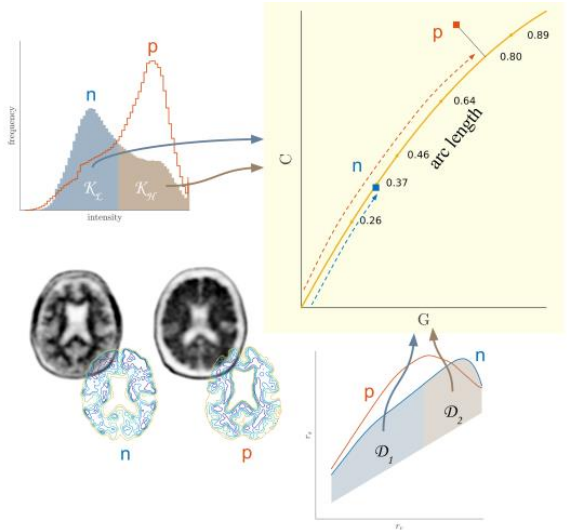
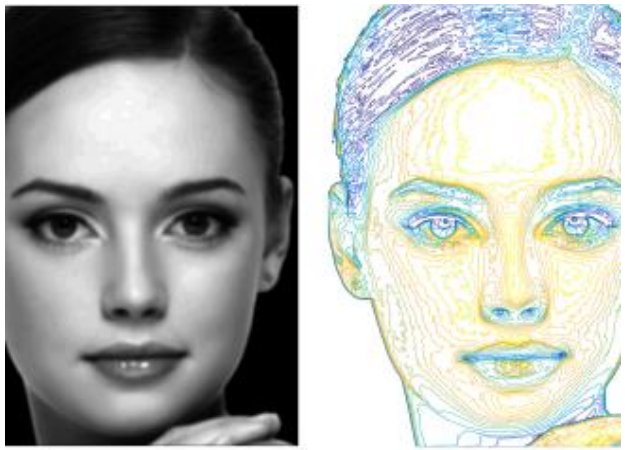


DESCRIPTION :

Extracting salient and robust features from images may often be affected by scaling, normalization, and orientation problems; generality and performance are often compromised. These problems are particularly relevant for low resolution and low contrast digital 3-D images. Although this analysis has been developed and optimized for PET images of the brain, it is a general geometrical method for automatic characterization, ranking and classification, similar to human visual analysis. It can be applied to any set of homogeneous data that represents a population of objects described by n-D scalar matrices. ELBA, its lightweight and fast algorithm, is able to capture global relevant properties of each image by computing features from image isosurfaces offering suitable alternative to comparing intensity-based methods. Features provided are sufficiently general to be applied to any kind of image summarizing its content



Object recognition

ADVANTAGES:

- Provides features, stable and easy to obtain, computable on any n-D matrix
- Perceptual approach closer to visual assessment
- Provides complementary info combinable with existing methods
- Avoid intensity normalization
- Extremely generalizable and flexible
- Not strictly requires image registration

APPLICATIONS:

- Clinical brain amyloid PET evaluation targeted to drug trial monitoring
- Supernovae detection in astronomical images
- Background filtering and object recognition
- Characterization of images time series
- Data mining
- Night vision enhancement
- Flaws classification and monitoring