Abstract

Image Analysis for the Classification of Brain Tumor Location on MR Images

Roya Choupani

Çankaya University Department of Computer Science , 06790 , TR

Abstract:

During the past few years, brain tumor segmentation in Magnetic Resonance Imaging(MRI) has become an emergent research area in the field of medical imaging system. Accurate detection of brain tumor plays a important role in the diagnosis of tumor. Me and my students develop a program which analyses the MR Images of patient and recognizes the tumor by using image processing and detects the location of tumor. Detection of required area is sensitive and critical subject in segmenting medical images. Accuracy and fast computation time is two important scales for these segmentation algorithms. These algorithms gave different results depending on data sets and anatomic structures of images. We implement some of these algorithms and combine them. With first test of our implemented algorithm we see that sensitivity and computation time(3 seconds) good at Tresholding with small datasets. These tests also show us classification based segmentation algorithms (K-NN, SVM, Bayers) segments tumor accurately and produce good results for large data set but undesirable behaviors can occur in case of where a class is under represented in training data. In addition to that, clustering algorithms (K-means, Fuzzy) performs very simple, fast and produce good results for non-noise image but for noise images it leads to serious inaccuracy in the segmentation. This could be solved by using accurate pre-processing algorithms before segmentation. More tests with this program will continue with new implementations.

Biography:

IAssistant Prof. Dr. Roya Choupani has completed his PhD at Delft University of Technology University with Scalable Video Coding thesis. She is the director of Image Analysis for the Classification of Brain Tumor Location on MR Images project. She has published many researches and her last publish was R Choupani, S.Wong, MR Tolun, "Using wavelet transform self-similarity for effective multiple description video coding",Information, Communications and Signal Processing(ICICS),1-5,2015.

Publication of speakers:

1. Karasolak, Mustafa & Choupani, Roya. (2019). Face Photograph Recognition via Generation from Sketches using Convolutional Neural Networks. International Journal of Multimedia and Image Processing. 9. 459-465. 10.20533/ijmip.2042.4647.2019.0057.

2. Göker, Onur & Nazlı, Nazlı & Erol, Mehmet & Choupani, Roya & Dogdu, Erdogan. (2018). A Robust Watermarking Scheme Over Quadrant Medical Image in Discrete Wavelet Transform Domain. 277-282. 10.1109/CoDIT.2018.8394908.

3. Hassanpour, Reza & Dogdu, Erdogan & Choupani, Roya & Göker, Onur & Nazlı, Nazlı. (2018). Phishing e-mail detection by using deep learning algorithms. ACMSE '18: Proceedings of the ACMSE 2018 Conference. 1-1. 10.1145/3190645.3190719.

4. Choupani, Roya & Wong, Stephan & Tolun, Mehmet. (2015). Drift-free video coding for privacy protected video scrambling. 1-5. 10.1109/ICICS.2015.7459830.

International Conference on Humanoid Robotics, Artificial Intelligence and Automation | May 21, 2020 | London, UK

Citation: Roya Choupani; Image Analysis for the Classification of Brain Tumor Location on MR Images; Humanoid 2020; May 21, 2020; London, UK