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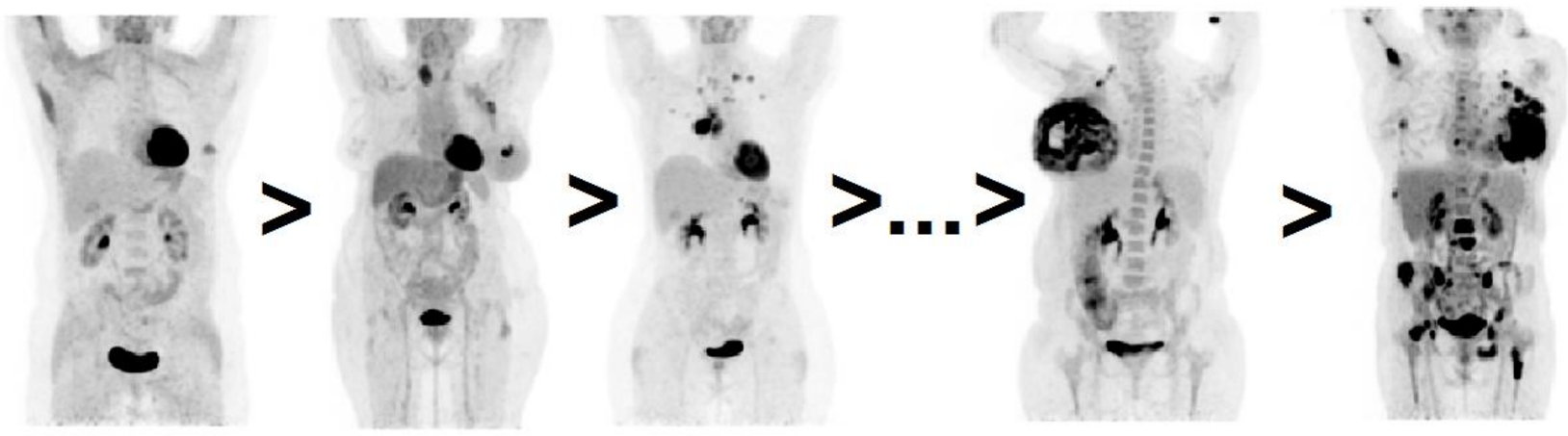
Automatic static and dynamic tumor quantification in whole-body PET/CT scans

Abstract

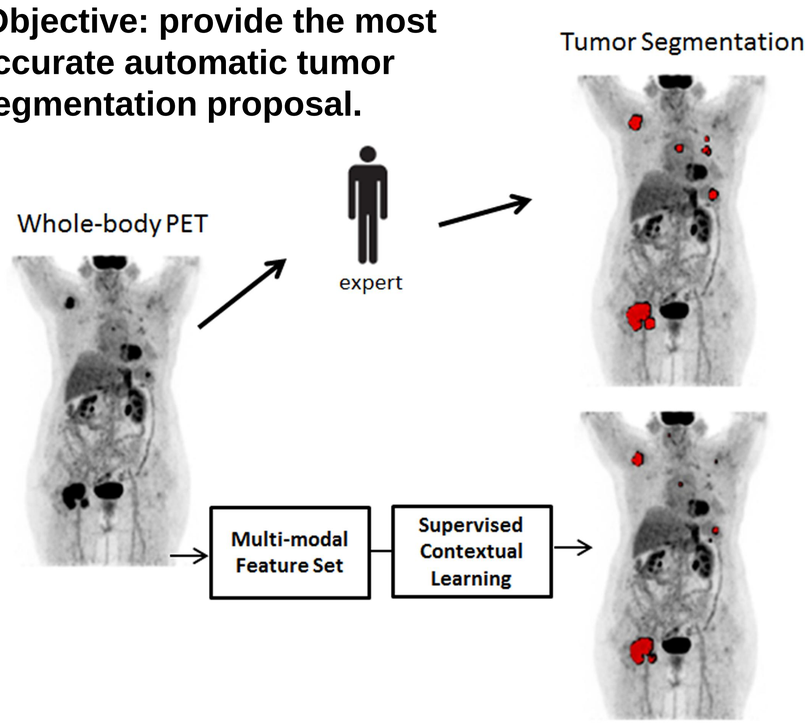
In this work we present an automatic tumor volume segmentation system of whole body PET scans, which would provide a relevant quantitative and objective framework in clinical nuclear medicine settings, specially in cancer response assessment scenarios. We focus on supervised learning schemes and contextual learning strategies.

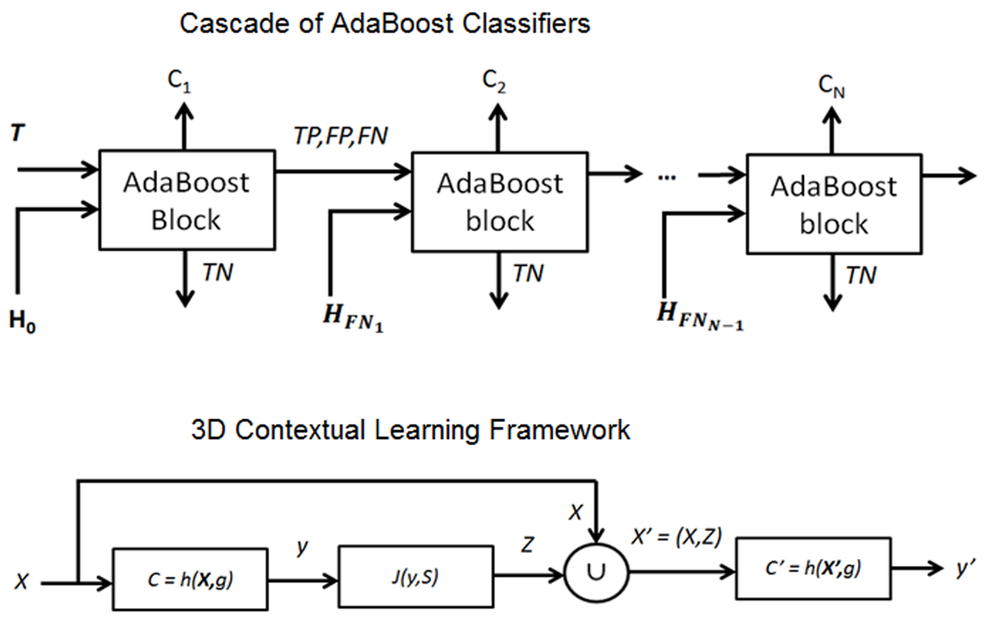
Automatic tumor quantification framework



Tumor volume, aggressiveness and spread as quantitative indicators of the patient's cancer state and stage.

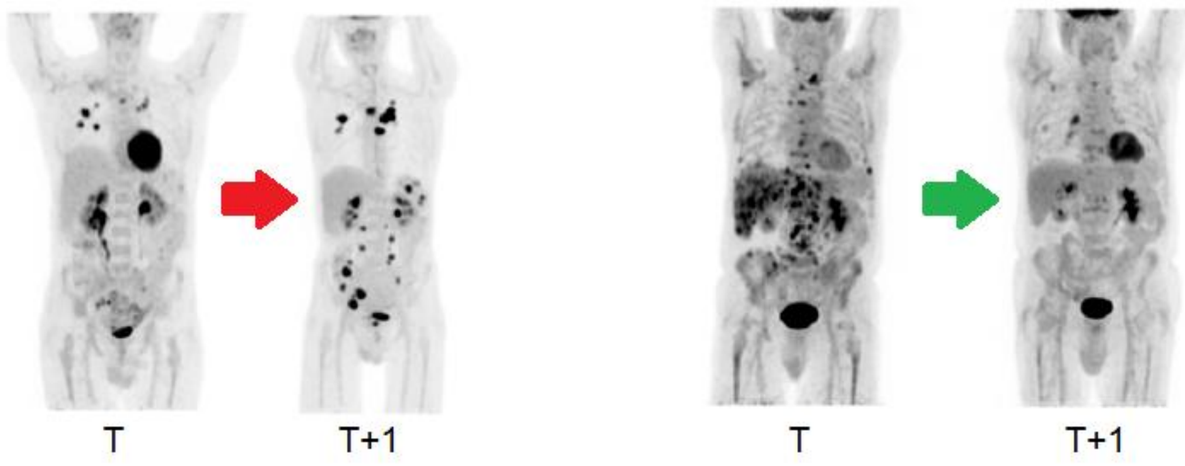
Objective: provide the most accurate automatic tumor segmentation proposal.



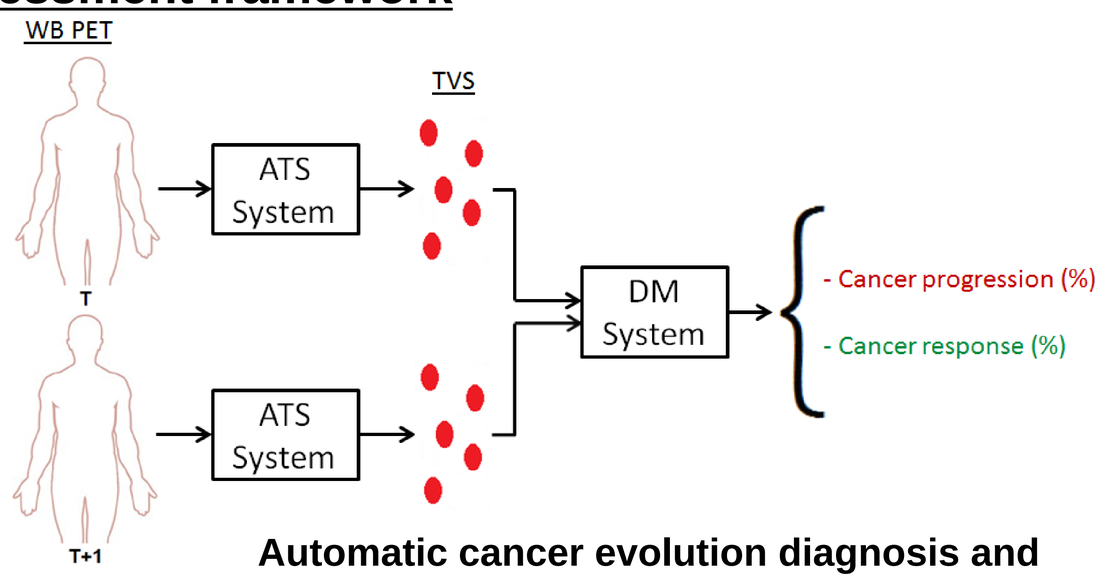


Automatic tumor volume segmentation (ATS) system design based on cascade learning and multi-scale stacked sequential learning .

Automatic cancer evolution assessment framework



Sample cancer evolution scenarios: progression (left) and response (right)



Automatic cancer evolution diagnosis and quantification system design.

Biography

Frederic Sampedro obtained the Computer Science BSc with honors in 2010 from the University of Barcelona (UB). In 2012, he obtained a MSc degree in Electrical Engineering and a MSc degree in Biomedical Engineering from the University of Barcelona and the Polytechnic University of Catalonia, respectively. In 2013, he obtained a MSc in Technological-based Business administration (UB). He is currently working in his PhD thesis about automatic tumor quantification in PET/CT imaging and coursing a MSc in Intelligent Systems (Universitat Pompeu Fabra).

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