Bruno Mendes

Python AI and Imaging

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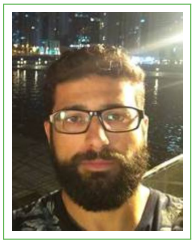

I have no special talent. I am only passionately curious.

Work Experience

2014–Now **Clinical Scientist (Medical Physicist) and Researcher**, *Instituto Português de Oncologia do Porto Francisco Gentil (IPO-PORTO)*

- Quality control procedures on ionizing radiation emitting equipment
- Data analysis, regression models and application of tolerance levels
- Python for medical image analysis and DICOM decoding
- Web-app (Django - Python) for daily dose rate monitoring of LINACs
- Responsible for personal dosimetry logistics
- Co-supervision of Master's Theses

Education

2020–Now **Doctoral Program in Biomedical Engineering**, *Faculdade de Engenharia da Universidade do Porto (FEUP)*

- Feature extraction, selection and model building
- Pipelines evaluation
- Prostate and organs at risk segmentation
- Prostate cancer aggressiveness prediction with CT and CBCT images

2011–2013 **Master in Medical Physics**, *Faculdade de Ciências da Universidade do Porto (FCUP)*

Title	*Narrow-Band Image Processing for Gastroenterological Examinations*
Supervisors	Ricardo Sousa and Carla Rosa
Description	Development of a framework for the classication of Barrett's oesophagus using DSIFT descriptors, Bag of words and SVM.

2007–2011 **Degree in Physics**, *FCUP*

Languages

Portuguese	Native	
English	C1	*Understanding, speaking and writing*

Computer skills

Web	Django, JavaScript, HTML, CSS	Learning	Scikit-learn, PyTorch
Data	Pandas, Numpy	Images	OpenCV, Scikit-image
Visualization	Matplotlib, Seaborn	Medical	VTK, ITK, PyDicom
Documents	LaTeX	Spreadsheet	VBA

Publications

Bruno Mendes, Inês Domingues, and João Santos. Multi-class Semantic Segmentation for Prostate Cancer Radiotherapy Treatment Optimization. In *International Conference on Mathematical Analysis and Applications in Science and Engineering ($ICMA^2SC'22$)*, 2022.

Bruno Mendes, Inês Domingues, and João Santos. CT Radiomic Features for a Prostate Cancer Evaluation Framework. In *Portuguese Conference on Pattern Recognition (RecPad)*, 2021.

Bruno Mendes, Inês Domingues, and João Santos. Radiomic Features for a Prostate Cancer Evaluation Framework. In *4th Doctoral Congress in Engineering (DCE), Symposium on Biomedical Engineering*, pages 33–35, 2021.

Bruno Mendes, Inês Domingues, Augusto Silva, and João Santos. Prostate Cancer Aggressiveness Prediction Using CT Images. *Life*, 11(11):1164, 2021.

Sandra Sarmento, Bruno Mendes, and Margarida Gouvêa. Automatic calculation of patient size metrics in computed tomography: What level of computational accuracy do we need? *Journal of Applied Clinical Medical Physics*, 19(1):218–227, 2018.

Ana Ribeiro, Bruno Mendes, and Sandra Sarmento. Variability of mammographic exam doses as a result of positioning and technique. *Physica Medica*, 52:109–110, 2018. Abstracts from the 2nd European Congress of Medical Physics.

J. Amorim, B. Mendes, E. Ribau, M. Gouvêa, and S. Sarmento. Image processing as a potential tool for ct dose optimization. *Physica Medica*, 32:316, 2016. Abstracts from the 1st European Congress of Medical Physics.

S. Sarmento, B. Mendes, and M. Gouvêa. The advantages of using average attenuation metrics to express patient size in computed tomography dose optimization. *Physica Medica*, 32:314–315, 2016. Abstracts from the 1st European Congress of Medical Physics.

J. Pereira, M.F. Pereira, S. Sarmento, A.D. Oliveira, J.G. Alves, M.J. Sousa, L. Cunha, A.G. Dias, B. Mendes, J.V. Cardoso, L.M. Santos, M. Gouvêa, and J.A.M. Santos. Patient surface and isocenter dose in fluoro-ct. *Physica Medica*, 32:329, 2016. Abstracts from the 1st European Congress of Medical Physics.

B. Mendes, F. Dias, D. Oliveira, and S. Sarmento. Assessing the feasibility of simulating different tube current limits in noise oriented atcm systems. *Physica Medica*, 32:311, 2016. Abstracts from the 1st European Congress of Medical Physics.

Bruno Mendes, Ricardo Sousa, Carla Rosa, and Miguel Coimbra. Colour Invariant Features for Narrow – Band Imaging in Gastroenterological Examinations. In *Portuguese Conference on Pattern Recognition (RecPad)*, 2013.

Presentations

27-06-2022–29-06-2022 **The International Conference on Mathematical Analysis and Applications in Science and Engineering ($ICMA^2SC'22$)**, *ISEP*, Porto

28-06-2021–29-06-2021 **Doctoral Congress in Engineering (DCE)**, *FEUP*, Porto