Andrea Bettinelli

Nationality: Italian

Mother tongue: Italian

AREA OF EXPERTISE

- Image analysis: development of automatic pipelines for large-data image processing (e.g., image denoising, image filtering, image quantification).
- Texture analysis: characterization of the texture contained within bioimages through the extraction of quantitative features (radiomics and deep-learning).
- Machine/statistical-learning: application of machine-learning and data-mining techniques to build prognostic, predictive, classification, and regression models.
- Statistical analysis: application of descriptive statistics and usage of statistical hypothesis tests on clinical data.
- Software development: programming and graphical user interface (GUI) development for the creation of user friendly and reusable software packages.
- Data handling and data integration: management of various image data formats and integration between imaging and clinical databases.

PROFESSIONAL EXPERIENCES

Health Researcher at the Medical Physics Department of Veneto Institute of Oncology – IOV IRCCS, Padua, Italy
Start (2023, 07) – Ongoing

Collaboration with the Medical Physics Department of Veneto Institute of Oncology - (IOV) IRCCS for research purposes.
Start (2019, 10) – End (2023, 06)

Tutor Junior at University of Padua (Padua, Italy) for "Statistical methods for Bioengineering" and "Elements of Informatics in Python"
Start (2021, 10) – End (2022, 02)

Data Scientist for radiomic studies at Veneto Institute of Oncology - (IOV) IRCCS, Padua
Start (2018, 06) – End (2019, 09)

EDUCATION

Postgraduate Degree

PhD in Information Engineering XXXV cycle (curriculum in Bioengineering)
University of Padua, Padua, Italy
Start (2019, 10) – (2023, 03)
ECTS (or CFU): 26 (over 20)
Supervisor: Professor Bertoldo Alessandra

Co-supervisor: Doctor Paiusco Marta

Graduate studies

Master's Degree in Bioengineering
University of Padua, Padua, Italy
Start (2016, 01) – End (2018, 04)
Final Grade: 110 (over 110) cum laude
Final Degree Project: Voxel-wise parametric mapping of glucose brain metabolism with an automatic image-derived arterial input function from multimodal 18F-FDG PET/MR data
Supervisor: Professor Bertoldo Alessandra
ECTS (or CFU): 123 (over 120)

Undergraduate studies

Bachelor's degree in Information Technology Engineering
University of Padua, Padua, Italy
Start (2011, 09) – End (2015, 11)
Final Degree Project: Modellizzazione e controllo di un sistema di bilanciamento
Supervisor: Professor Valcher Maria Elena

High School

High School Diploma at Liceo Scientifico P. Paleocapa, Rovigo, Italy
Start (2006, 09) – End (2011, 07)

OTHER RELEVANT EDUCATIONAL EXPERIENCES

PhD Abroad Period
Host Institution: OncoRay (National Center for Radiation Research in Oncology), Dresden, Germany. Start (2022, 08) – End (2022, 10)

Erasmus Programme
Host Institution: Graz University of Technology, Graz, Austria
Start (2017, 02) – End (2017, 07)

PERSONAL SKILLS

English

UNDERSTANDING		**SPEAKING**		**WRITING**
Listening	**Reading**	**Spoken interaction**	**Spoken production**	
B2	C1	C1	B2	B2
Levels: A1/2: Basic user - B1/2: Independent user - C1/2 Proficient user Common European Framework of Reference for Languages				

Other language(s)

French

Computer skills

Advanced: **Matlab, , Office Suite, Google Docs, Photoshop, Blender, 3D slicer**
Intermediate: **Java, R software, Phyton, Github, Simulink**
Basic: **SQL, Raystation, Eclipse**

Other skills

During my studies and my working experiences I have developed interpersonal skills based on respect and acceptance. I have good abilities as a team player and good communication capabilities, acquired during workshops and team works. I

had the opportunity to successfully coordinate a multicentre group of IRCCS, achieving the publication of the obtained results. Good capabilities of software development, software maintenance and software publication. Excellent abilities of scientific writing and reporting. Reviewer activity for "PLOS ONE", "Physica Medica", "Radiotherapy and Oncology", "Scientific Reports" and "European Journal of Radiology".
Expert Photographer.

ADDITIONAL INFORMATION

Conferences, workshops and training schools

- **"GliMR Training School – Advanced MRI for glioma imaging diagnostics"**, 22-25 January 2024, Padua, Italy (invited trainer)
- **"AIFM course: Software certificati per l'analisi di immagini nella pratica clinica: attività del fisico medico"**, 8-9 November 2023, Bergamo, Italy
- **"8th Annual Meeting ACC 2023"**, 27-29 September 2023, Genoa, Italy
- **"34th Pezcoller Symposium"**, 19-20 June 2023, Trento, Italy
- **"12° Congresso Nazionale AIFM 2023"**, 8-11 June 2023, Florence, Italy
- **"4th GliMR Annual Meeting 2023 – Past, present and future"**, 3-5 May 2023, Porto, Portugal
- **"Society of Imaging Informatics in Medicine (SIIM) annual meeting"**, 9-11 June 2022, Kissimmee (online), Florida, USA (invited speaker for oral presentation)
- **"The 4th European Congress of Medical Physics (ECMP)"**, 18-20 August 2022, Dublin, Ireland
- **"GliMR Training School – Artificial Intelligence in Neuro-Oncology"**, 25-27 July 2022, Dublin, Ireland
- **"ECR 2022 - It's time to change"**, 13-17 July 2022, Wien, Austria
- **"2021 Physics Workshop - Science in Development: Mining the radiotherapy dose: exploring dose-response patterns in radiation therapy"**, 22-23 October 2021, Budapest (online), Hungary
- **"Radiomics toolbox: workflow & quality management"**, 8-10 September 2021, Pavia, Italy
- **"The 3rd European Congress of Medical Physics (ECMP)",** 16-19 June 2021, Turin, Italy
- **"RSNA 106th Annual Meeting"**, 29 November - 05 December 2020, Chicago (online), Illinois, USA
- **"XXXIX Annual School of Bioengineering"**, 7-10 September 2020, Brixen (online), Italy
- **"3rd ESTRO Physics Workshop: Multi-source data fusion for decision support systems in radiation oncology: opportunities, methodologies, standardizations**

and clinical translation", 25-26 October 2019, Budapest, Hungary

- **"Big Data for Imaging"**, 9-12 December 2018, Maastricht, The Netherlands
- **"XXXV Annual School of Bioengineering: La bioingegneria per il benessere e l'invecchiamento attivo"**, 26-29 September 2016, Brixen, Italy

Other

Two-week language courses:

- 2006 Cambridge, English, level upper intermediate
- 2007 Paris, French, level B1
- 2008 Edinburgh, English, level C1/ ESOL level B2.1
- 2009 Leicester, English, level advanced
- 2010 Southampton, English

2017 German breakthrough 1, level A1/1 ST phase

PUBLICATIONS ON INTERNATIONAL JOURNALS

1. Whybra P, Zwanenburg A, Andrearczyk V, Schaer R, Apte AP, Ayotte A, Baheti B, Bakas S, **Bettinelli A**, Boellaard R, Boldrini L, Buvat I, Cook GJR, Dietsche F, Dinapoli N, Gabryś HS, Goh V, Guckenberger M, Hatt M, Hosseinzadeh M, Iyer A, Lenkowicz J, Loutfi MAL, Löck S, Marturano F, Morin O, Nioche C, Orlhac F, Pati S, Rahmim A, Rezaeijo SM, Rookyard CG, Salmanpour MR, Schindele A, Shiri I, Spezi E, Tanadini-Lang S, Tixier F, Upadhaya T, Valentini V, van Griethuysen JJM, Yousefirizi F, Zaidi H, Müller H, Vallières M, Depeursinge A. The Image Biomarker Standardization Initiative: Standardized Convolutional Filters for Reproducible Radiomics and Enhanced Clinical Insights. Radiology. 2024 Feb;310(2):e231319. doi: 10.1148/radiol.231319. PMID: 38319168; PMCID: PMC10902595.
2. Busato F, Fiorentin D, **Bettinelli A**, Anile G, Ghi MG, Scaggion A, Dusi F, Paiusco M, Ferrari M, Nicolai P, Marturano F. Dosiomic-based prediction of dysgeusia in head & neck cancer patients treated with radiotherapy. Radiother Oncol. 2023 Nov;188:109896. doi: 10.1016/j.radonc.2023.109896. Epub 2023 Sep 1. PMID: 37660751.
3. Marturano F, Guglielmo P, **Bettinelli A**, Zattoni F, Novara G, Zorz A, Sepulcri M, Gregianin M, Paiusco M, Evangelista L. Role of radiomic analysis of [18F]fluoromethylcholine PET/CT in predicting biochemical recurrence in a cohort of intermediate and high risk prostate cancer patients at initial staging. Eur Radiol. 2023 Oct;33(10):7199-7208. doi: 10.1007/s00330-023-09642-9. Epub 2023 Apr 20. PMID: 37079030; PMCID: PMC10511374.
4. Guglielmo P, Marturano F, **Bettinelli A**, Sepulcri M, Pasello G, Gregianin M, Paiusco M, Evangelista L. Additional Value of PET and CT Image-Based Features in the Detection of Occult Lymph Node Metastases in Lung Cancer: A Systematic Review of the Literature. Diagnostics (Basel). 2023 Jun 23;13(13):2153. doi: 10.3390/diagnostics13132153. PMID: 37443547; PMCID:

PMC10340586.

5. Cavinato S, **Bettinelli A**, Dusi F, Fusella M, Germani A, Marturano F, Paiusco M, Pivato N, Rossato MA, Scaggion A. Prediction models as decision-support tools for virtual patient-specific quality assurance of helical tomotherapy plans. Phys Imaging Radiat Oncol. 2023 Mar 28;26:100435. doi: 10.1016/j.phro.2023.100435. PMID: 37089905; PMCID: PMC10113896.

6. **Bettinelli A**, Marturano F, Sarnelli A, Bertoldo A, Paiusco M. The ImSURE phantoms: a digital dataset for radiomic software benchmarking and investigation. Sci Data. 2022 Nov 12;9(1):695. doi: 10.1038/s41597-022-01715-6. PMID: 36371503; PMCID: PMC9653377.

7. Braghetto A, Marturano F, Paiusco M, Baiesi M, **Bettinelli A**. Author Correction: Radiomics and deep learning methods for the prediction of 2-year overall survival in LUNG1 dataset. Sci Rep. 2023 Oct 16;13(1):17561. doi: 10.1038/s41598-023-44197-1. Erratum for: Sci Rep. 2022 Aug 19;12(1):14132. PMID: 37845291; PMCID: PMC10579397.

8. **Bettinelli A**, Marturano F, Avanzo M, Loi E, Menghi E, Mezzenga E, Pirrone G, Sarnelli A, Strigari L, Strolin S, Paiusco M. A Novel Benchmarking Approach to Assess the Agreement among Radiomic Tools. Radiology. 2022 Jun;303(3):533-541. doi: 10.1148/radiol.211604. Epub 2022 Mar 1. Erratum in: Radiology. 2022 May;303(2):E30. PMID: 35230182.

9. Silvestri E, Volpi T, **Bettinelli A**, De Francisci M, Jones J, Corbetta M, Cecchin D, Bertoldo A. Image-derived Input Function in brain [18F]FDG PET data: which alternatives to the carotid siphons? Annu Int Conf IEEE Eng Med Biol Soc. 2022 Jul;2022:243-246. doi: 10.1109/EMBC48229.2022.9871200. PMID: 36085666.

10. Guglielmo P, Marturano F, **Bettinelli A**, Gregianin M, Paiusco M, Evangelista L. Additional Value of PET Radiomic Features for the Initial Staging of Prostate Cancer: A Systematic Review from the Literature. Cancers (Basel). 2021 Nov 30;13(23):6026. doi: 10.3390/cancers13236026. PMID: 34885135; PMCID: PMC8657371.

11. Fantini L, Belli ML, Azzali I, Loi E, **Bettinelli A**, Feliciani G, Mezzenga E, Fedeli A, Asioli S, Paganelli G, Sarnelli A, Matteucci F. Exploratory Analysis of 18F-3'-deoxy-3'-fluorothymidine (18F-FLT) PET/CT-Based Radiomics for the Early Evaluation of Response to Neoadjuvant Chemotherapy in Patients With Locally Advanced Breast Cancer. Front Oncol. 2021 Jun 24;11:601053. doi: 10.3389/fonc.2021.601053. PMID: 34249671; PMCID: PMC8264651.

12. De Monte F, Castaldi B, Branchini M, **Bettinelli A**, Milanesi O, Paiusco M, Roggio A. Typical values for pediatric interventional cardiology catheterizations: A standardized approach towards Diagnostic Reference Level establishment. Phys Med. 2020 Aug;76:134-141. doi: 10.1016/j.ejmp.2020.07.001. Epub 2020 Jul 13. PMID: 32673825.

13. Scaggion A, Fusella M, Agnello G, **Bettinelli A**, Pivato N, Roggio A, Rossato MA, Sepulcri M, Paiusco M. Limiting treatment plan complexity by applying a novel commercial tool. J Appl Clin Med Phys. 2020 Aug;21(8):27-34. doi: 10.1002/acm2.12908. Epub 2020 May 21. PMID: 32436656; PMCID: PMC7484888.

14. Bettinelli A, Branchini M, De Monte F, Scaggion A, Paiusco M. Technical Note: An IBEX adaption toward image biomarker standardization. Med Phys. 2020 Mar;47(3):1167-1173. doi: 10.1002/mp.13956. Epub 2020 Jan 20. PMID: 31830303.

15. Branchini M, Zorz A, Zucchetta P, **Bettinelli A**, De Monte F, Cecchin D, Paiusco M. Impact of acquisition count statistics reduction and SUV discretization on PET radiomic features in pediatric 18F-FDG-PET/MRI examinations. Phys Med. 2019 Mar;59:117-126. doi: 10.1016/j.ejmp.2019.03.005. Epub 2019 Mar 16. PMID: 30928060.