

EUROPEAN
CURRICULUM VITAE



PERSONAL INFORMATION

Name **SPADEA, Maria Francesca**
Telephone [REDACTED]
E-mail **mfspadea@unicz.it**
Date of birth [REDACTED]
Nationality [REDACTED]
Gender **Female**
Civil status [REDACTED]

ACADEMIC CAREER

Period	August 2007 – today
University/Research Institute	Magna Graecia University of Catanzaro (Italy)
Position held	ASSISTANT PROFESSOR AT EXPERIMENTAL AND CLINICAL MEDICINE DEPARTMENT
Main activities and responsibilities	Scientific research; Undergraduate, Graduate, Postgraduate Teaching Activities
Period	October 2010 – July 2011
University/Research Institute	Massachusetts General Hospital (Harvard Medical School), Boston, MA, USA
Position held	FULBRIGHT SCHOLAR AT PHYSICS DIVISION OF RADIATION THERAPY DEPARTMENT
Main activities and responsibilities	Scientific research
Period	October 2006 – July 2007
University/Research Institute	Politecnico di Milano University, Milano (Italy)
Occupation or position held	RESEARCH FELLOW AT BIOENGINEERING DEPARTMENT
Main activities and responsibilities	Scientific research

**ACADEMIC AND
PROFESSIONAL LICENSES**

Date	March 30 th , 2017
Title of qualification awarded	Qualified as ASSOCIATE PROFESSOR OF BIOENGINEERING
Date	February 24 th , 2003
Title of qualification awarded	LICENSED PROFESSIONAL ENGINEER

EDUCATION

Period	March 2003-May 2006
University	Politecnico di Milano University, Milano, Italy
Title of qualification awarded	PhD Degree in Bioengineering
Date of degree	October 18th, 2006
Title of the Thesis	Automatic positioning techniques in advanced radiotherapy treatments
University	University of Calabria, Rende (Cs), Italy
Title of qualification awarded	MASTER DEGREE IN MECHANICAL ENGINEER
Date of degree	October 18th, 2002
Title of the Thesis	Comparison between Laser Doppler Anemometry measurements and Computed Fluid Dynamics simulations to test a high performance engine
Score	Magna cum Laude

TRAINING SCHOOLS

Period	July 2003
Training Organization and Location	Politecnico di Torino University, Torino (Italy)
Topic	<i>Nanoscience and nanoengineering for medical application</i>
Period	September 2003
Training Organization and Location	Italian National Group of Bioengineering, Bressanone (Italy)
Topic	<i>Movement Analysis</i>
Period	January 2004
Training Organization and Location	Politecnico di Milano University, Milano (Italy)
Topic	<i>The Finite Element Method for engineering applications</i>
Period	September 2004
Training Organization and Location	Italian National Group of Bioengineering, Bressanone (Italy)
Topic	<i>Advanced Method for Biomedical Signal Processing</i>
Period	September 2005
Training Organization and Location	Italian National Group of Bioengineering, Bressanone (Italy)
Topic	<i>Materials for bioengineering applications</i>
Period	February 2006
Training Organization and Location	European School of Oncology, Milano (Italy)
Topic	<i>Advanced in Radiation Therapy</i>

LANGUAGES

MOTHER TONGUE **ITALIAN**

OTHER LANGUAGES

	ENGLISH	SPANISH
Reading skills	Excellent	Good
Writing skills	Excellent	Good
Verbal skills	Excellent	Good

TEACHING EXPERIENCE

Undergraduate Courses

Period	2005-2006
Course	Matlab Laboratory , 2 ECTS (Computer Science Program of Politecnico di Milano University, Milano, IT)
Period	2007-today
Course	Medical Imaging , 6 ECTS (Biomedical Engineering Bachelor Program of Magna Graecia University, Catanzaro, IT)
Period	2007-2012
Course	Electrical Safety and Health Management , 4 ECTS (Biomedical Engineering Bachelor Program of Magna Graecia University, Catanzaro, IT)
Period	2008-2010
Course	Bioengineering I , 6 ECTS (Biomedical Engineering Bachelor Program of Magna Graecia University, Catanzaro, IT)

Graduate Courses

Period	2008-2010
Course	Bioengineering II , 6 ECTS (Biomedical Engineering Master Program of Magna Graecia University, Catanzaro, IT)
Period	2011-2014
Course	Bioengineering applications , 9 ECTS (Medical Program of Magna Graecia University, Catanzaro, IT)
Period	2014-today
Course	Medical imaging processing for image guided surgery , 9 ECTS (Biomedical Engineering Master Program of Magna Graecia University, Catanzaro, IT)
Period	2013-2014
Course	Health Risk Assessment and Management , 4 ECTS (Clinical Engineering Master Program of Magna Graecia University, Catanzaro, IT)

Invited Courses

Period	2011-2013
Course	Basic Electrophysiology , 2 ECTS (Bioelectronic Master Program of Magna Graecia University, Catanzaro, IT)
Period	2013-2014
Course	Imaging in Oncology , 2 ECTS (Phd Program in Molecular and Translational Oncology and Advanced Medical-Surgical Technologies Magna Graecia University, Catanzaro, IT)
Period	2014-2015
Course	Basic Electrophysiology , 2 ECTS (Health Knowledge Manager Master Program of Magna Graecia University, Catanzaro, IT)
Period	2014-2015
Course	Cardiovascular Imaging and case study , 2,5 ECTS (Innovative approaches in clinical cardiology Master Program of Magna Graecia University, Catanzaro, IT)

Mentoring skills and competences

During the last 10 years I have been supervising for their final theses or research projects more than 30 BSc Students, more than 20 MSc Students, 4 PhD Students and 2 Post Docs. The projects I assign are usually very practical and connected to clinical open questions. I highly encourage student internships during the final year (where I established several agreements with local clinical Institutions and Companies) and training experience abroad, especially taking advantage of Erasmus Project and other specific travel grants. I have been the Academic Tutor for 4 Erasmus traineeship projects (2 with Germany, 1 with Switzerland and 1 with Portugal) and 2 "Messaggeri della Conoscenza" travel grants (awarded by the Italian Minister of Education) where 2 BScs student spent 2 months at Harvard Medical School in Boston. About 90% of my students were able to get a job in related bioengineering field within 6 months from graduation, sometime with excellent position in Siemens, General Electrics and other Biomedical Engineering companies.

PHD BOARD DUTIES

Period	2008-2013
Board, University	PhD in Biomedical Engineering, Magna Graecia University of Catanzaro, IT
Role	Member
Period	2013-today
Board, University	PhD in Molecular and Translational Oncology and Advanced Medical-Surgical Technologies, Magna Graecia University of Catanzaro, IT
Role	Member
Period	2016-2017
Board, University	PhD in Bioengineering, Politecnico di Milano University, IT
Role	External Reviewer

Awards

Period	2002
Type of Award	Award for being highest scored student and completing Master Degree early
Institution	Department of Mechanical Engineering, University of Calabria, Cosenza, IT
Period	2006
Type of Award	"Best Research Project" in young investigators competition
Institution	Department of Bioengineering, Politecnico of Milano University, Milano, IT
Period	2010
Type of Award	Award in the "Research Scholar" category
Institution	Fulbright Commission, Washington (USA)
Period	2016
Type of Award	Award in the "Research" category
Institution	Junior Chamber International (JCI), in "Research" category, JCI Lamezia Terme, IT

RESEARCH PROJECTS AND GRANTS

Period	2004-2007
Project/Grant	C.A.P.H. (Computer Aided Positioning in Hadrontherapy), ~800 K€
Founded by	Fondazione CNAO (Milano, IT)
Role	Co-investigator. Specific task: Design of a 6-degree of freedom automatic couch
Period	2007
Project/Grant	Progetto Rocca "Seed funds", 5K€
Founded by	Fondazione Rocca (Milano, IT) and Massachusetts Institute of Technology (Boston, USA)
Role	Co-PI
Period	2008-2009
Project/Grant	Voucher "Young Investigators", 20K€
Founded by	Regione Calabria (IT)
Role	PI
Period	2010-2011
Project/Grant	Flubright Scholarship, 12K€
Founded by	Fulbright Commission, Washington (USA)
Role	PI
Period	2013-2015
Project/Grant	CARDIO-TECH, ~7000 K€
Founded by	Italian Minister of Education (IT)
Role	Co-Investigator. Specific task: Prediction of Coronary Artery location on fluoroscopic images without contrast mean
Period	2013-2016
Project/Grant	OPTIMA CARDIOPATHS
Founded by	Italian Minister of Education (IT)
Role	Co-Investigator. Specific task: Automatic assessment of vascular complexity on fluoroscopic images
Period	2015-2016
Project/Grant	AWS Cloud Credits for Research Application in deep learning (20K€)
Founded by	Amazon (USA)
Role	Co-PI
Period	2015
Project/Grant	GPU Grant for deep learning applications (GPU Hardware)
Founded by	NVIDIA Corporation (USA)
Role	PI
Period	2017
Project/Grant	Private donation for Automatic Image Segmentation research project (35K€)
Founded by	Medical Software Solutions GmbH (CH)
Role	PI

BIBLIOMETRIC INDEXES

Scopus H=14, Citations=449
Google Scholar H=16, Citationss= 718

ACTIVE COLLABORATIONS WITH NATIONAL AND INTERNATIONAL INSTITUTIONS

Institution
Research Topic

Radiotherapy Division, European Institute of Oncology, Milano (IT)
Multi-Atlas Based Segmentation

Institution
Research Topic

Division of Cardiology, "Mater Domini" General Hospital, Catanzaro, (IT)
1) Automatic assessment of vascular complexity by fractal analysis
2) Automatic segmentation of Conorary Arteries

Institution
Research Topic

Metabolic Diseases Unit, "Mater Domini" General Hospital, Catanzaro, (IT)
Longitudinal Motion Assessment of the Carotid Artery

Institution
Research Topic

Department of Radiation Oncology, Massachusetts General Hospital, Boston (USA)
Image Registration

Institution
Research Topic

Biomedical Engineering Division, "Pugliese-Ciaccio" Hospital, Catanzaro, (IT)
Optical localization in Neurosurgery

Institution
Research Topic

Surgical Planning Laboratory, Brigham Women Hospital, Boston (USA)
Accurate segmentation of needles from Magnetic Resonance Imaging (MRI) data
<http://needlefinder.org>

Institution
Research Topic

National Alliance for Medical Imaging Computing (USA)
3D Slicer Module Developing and Testing

Institution
Research Topic

DKFZ, Heidelberg, (D), UMCG (NL) and Martinos Center, Boston (USA)
PseudoCT generation from MRI and CBCT data

ADDITIONAL ACTIVITIES

Co-founder and member of ImagEngLab START UP (January 2016)
ImagEngLab aims at developing new devices and solution for TeleHealth and Image Processing
www.imagenglab.com

*Autorizzo il trattamento dei miei dati personali ai sensi del Dlgs 196 del 30 giugno 2003 e dell'art. 13
GDPR (Regolamento UE 2016/679) ai fini della ricerca e selezione del personale.*



Lista pubblicazioni quinquennio precedente l'A.A. 19/20

Full papers

1. Zaffino P, Pernelle G, Mastmeyer A, Mehrtash A, Zhang H, Kikinis R, Kapur T, **Spadea MF**. Fully automatic catheter segmentation in MRI with 3D convolutional neural networks: application to MRI-guided gynecologic brachytherapy. *Phys Med Biol*. 2019 Jul 4. doi: 10.1088/1361-6560/ab2f47.
2. **Spadea MF**, Pileggi G, Zaffino P, Salome P, Catana C, Izquierdo-Garcia D, Amato F, Seco J. Deep Convolution Neural Network (DCNN) multi-plane approach to synthetic CT generation from MR images - application in brain proton therapy. *Int J Radiat Oncol Biol Phys*. 2019 Jul 1. pii: S0360-3016(19)33423-6. doi: 10.1016/j.ijrobp.2019.06.2535.
3. Tappeiner E, Pröll S, Hönig M, Raudaschl PF, Zaffino P, **Spadea MF**, Sharp GC, Schubert R, Fritscher K. Multi-organ segmentation of the head and neck area: an efficient hierarchical neural networks approach. *International journal of computer assisted radiology and surgery*. 2019 Mar 7:1-0.
4. Presta I, Vismara M, Novellino F, Donato A, Zaffino P, Scali E, Pirrone KC, **Spadea MF**, Malara N, Donato G. Innate immunity cells and the neurovascular unit. *International journal of molecular sciences*. 2018 Dec;19(12):3856.
5. Speier C, Pileggi G, Izquierdo-Garcia D, Catana C, Sharp G, **Spadea MF**, Bert C, Seco J. Advanced multi-modal methods for cranial pseudo-CT generation validated by IMRT and VMAT radiation therapy plans. *Int J Radiat Oncol Biol Phys*. 2018 Jun 29. pii: S0360-3016(18)31015-0.
6. Pileggi G, Speier C, Sharp GC, Izquierdo Garcia D, Catana C, Pursley J, Amato F, Seco J, **Spadea MF**. Proton range shift analysis on brain pseudo-CT generated from T1 and T2 MR. *Acta Oncol*. 2018 May 29:1-11.
7. Raudaschl P, Zaffino P, Sharp G, **Spadea M**, Chen A, Dawant B et al. Evaluation of segmentation methods on head and neck CT: Auto-segmentation challenge 2015. *Medical Physics*. 2017;44(5):2020-2036.
8. Ciardo D, Gerardi M, Vigorito S, Morra A, [...], **Spadea M** et al. Atlas-based segmentation in breast cancer radiotherapy: Evaluation of specific and generic-purpose atlases. *The Breast*. 2017;32:44-52.
9. Scaramuzzino S, Carallo C, Pileggi G, Gnasso A, **Spadea M**. Longitudinal Motion Assessment of the Carotid Artery Using Speckle Tracking and Scale-Invariant Feature Transform. *Annals of Biomedical Engineering*. 2017;45(8):1865-1876.
10. Zaffino P, Raudaschl P, Fritscher K, Sharp G, **Spadea M**. Technical Note: plastimatch mabs, an open source tool for automatic image segmentation. *Medical Physics*. 2016;43(9):5155-5160.
11. Fritscher K, Raudaschl P, Zaffino P, **Spadea M**, Sharp G, Schubert R. Deep Neural Networks for Fast Segmentation of 3D Medical Images. *Lecture Notes in Computer Science*. 2016;9901(2):158-165.
12. Seco J, **Spadea M**. Imaging in particle therapy: State of the art and future perspective. *Acta Oncologica*. 2015;54(9):1254-1258.
13. Fritscher K, Raudaschl P, Zaffino P, Sharp G, **Spadea M**, Schubert R. Machine-learning based image segmentation using Manifold Learning and Random Patch Forests. *Proceedings of Imaging and Computer Assistance in Radiation Therapy Workshop, MICCAI*. 2015;1:1-9.

14. Raudaschl P, Fritscher K, Zaffino P, Sharp G, **Spadea M**, Schubert R. A novel atlas-selection approach for multiple atlas segmentation based on Manifold Learning and Random Forests using Multi-Scale Image Patches. Proceedings of Imaging and Computer Assistance in Radiation Therapy Workshop, MICCAI. 2015;1:10-17.
15. Zaffino P, Limardi D, Scaramuzzino S, Alterio D, [...], **Spadea M** Feature Based Atlas Selection Strategy for Segmentation of Organs at Risk in Head and Neck District. Proceedings of Imaging and Computer Assistance in Radiation Therapy Workshop, MICCAI. 2015;1:34-41.
16. Zaffino P, Ciardo D, Piperno G, Travaini L, Comi S, [...], **Spadea M**. Radiotherapy of Hodgkin and Non-Hodgkin Lymphoma. Technology in Cancer Research & Treatment. 2015;15(2):355-364.
17. **Spadea M**, Fassi A, Zaffino P, Riboldi M, Baroni G, Depauw N et al. Contrast-Enhanced Proton Radiography for Patient Set-up by Using X-Ray CT Prior Knowledge. International Journal of Radiation Oncology*Biology*Physics. 2014;90(3):628-636.
18. Fritscher K, Peroni M, Zaffino P, **Spadea M**, Schubert R, Sharp G. Automatic segmentation of head and neck CT images for radiotherapy treatment planning using multiple atlases, statistical appearance models, and geodesic active contours. Medical Physics. 2014;41(5):051910.
19. **Spadea M**, Verburg J, Baroni G, Seco J. The impact of low-Z and high-Z metal implants in IMRT: A Monte Carlo study of dose inaccuracies in commercial dose algorithms. Medical Physics. 2014;41(1):011702.
20. Raudaschl P, Fritscher K, Zaffino P, Sharp G, **Spadea M**, Schubert R. A novel atlas-selection approach for multi-atlas based segmentation using the correlation of inter-atlas similarities. The MIDAS Journal - Image-Guided Adaptive Radiation Therapy (IGART) [Internet]. 2014;1(1):8 pages. Available from: <http://hdl.handle.net/10380/3501>
21. Iano G, Tagaste B et al. 3D optoelectronic analysis of interfractional patient setup variability in frameless extracranial stereotactic radiotherapy. International Journal of Radiation Oncology*Biology*Physics. 2006;64(2):635-642.
22. Riboldi M, Garibaldi C, Baroni G, **Spadea M**, Tagaste B, Catalano G et al. Extracranial frameless stereotactic radiosurgery with multi-modal imaging and opto-electronic position verification. International Congress Series. 2004;1268(C):318-322.

Abstracts published on peer reviewed International Journals

1. Pileggi G, Speier C, Sharp G, Catana C, Izquierdo-Garcia [...], **Spadea M**. Dosimetric assessment of pseudo-CT based proton planning. Radiotherapy and Oncology. 2017;123(Supplement 1):S842.
2. Speier C, Pileggi G, Izquierdo D, Catana C, Sharp G, [...], **Spadea M**. Pseudo-CT generation from T1 and T2-weighted brain MRI based on a localised correlation approach. Radiotherapy and Oncology. 2016;119(Supplement 1):S868-S869.
3. Seco J, Izquierdo D, Catana C, Pileggi G, Pursley J, [...], **Spadea M**. Proton therapy planning for brain tumors using MRI-generated PseudoCT. Radiotherapy and Oncology. 2016;119(Supplement 1):S863.
4. Zaffino P, Raudaschl P, Fritscher K, **Spadea M**, Sharp G. Validation of Plastimatch MABS, a Tool for Automatic Image Segmentation. Medical Physics. 2016;43(6Part26):3658-3658.
5. Gnasso A, **Spadea M**, Scaramuzzino S, Pileggi G, Zaffino P, Carallo C. A device acquiring, digitizing, and sending the results of every glucometer in digital format for telemedicine purposes. Diabetes Technology & Therapeutics. 2016;18(Supplement 1):A90-A90.

6. **Spadea M**, Izquierdo D, Catana C, Collins-Fekete C, Bortfeld T, Seco J. Feasibility Study of MRI-Only Proton Therapy Planning. *Medical Physics*. 2015;42(6Part10):3316-3317.
7. **Spadea M**, Gallo A, Amato F, Scaramuzzino S, Lamanna L. Tomographic reconstruction of regular and irregular fields by means of optical scintillating fiber layer. *Radiotherapy and Oncology*. 2014;111(Supplement 1):S159.
8. Zaffino P, Fritscher K, Peroni M, **Spadea M**, Schubert R, Sharp G. Atlas selection strategies for multi atlas based segmentation algorithm for head and neck radiotherapy. *Radiotherapy and Oncology*. 2014;111(Supplement 1):S70-S71.

**ELENCO DEGLI AFFIDAMENTI E TIPOLOGIA DI INSEGNAMENTI SVOLTI
PRESSO ISTITUTI UNIVERSITARI ITALIANI O ESTERI RELATIVI AL
QUINQUENNIO PRECEDENTE L'A.A. 19/20**

<i>Anni Accademici</i>	14/15 a 18/19
<i>Insegnamento</i>	<i>Bioimmagini</i>
<i>Corso di Laurea</i>	<i>Ingegneria Informatica e Biomedica, triennale</i>
<i>Università</i>	<i>Università Magna Graecia di Catanzaro</i>
<i>Anni Accademici</i>	14/15, 15/16, 17/18, 18/19
<i>Insegnamento</i>	<i>Elaborazione di Immagini per la Chirurgia Assistita</i>
<i>Corso di Laurea</i>	<i>Ingegneria Biomedica, magistrale</i>
<i>Università</i>	<i>Università Magna Graecia di Catanzaro</i>

DICHIARAZIONE SOSTITUTIVA DI CERTIFICAZIONE

(ai sensi dell'art. 46 del D.P.R. n. 445/2000 del 28.12.2000)

La sottoscritta **Maria Francesca Spadea**, nata a [REDACTED] il [REDACTED]

DICHIARA

che in data del 24 Luglio 2019, secondo i dati reperibili dalla banca dati ISI – Web of Knowledge,

- il proprio Impact Factor cumulativo risulta essere pari a 104.818. Si precisa che, ai fini del calcolo di tale indice bibliometrico, non essendo disponibili i valori di Impact Factor relativi al 2019, per i lavori a rivista pubblicati nel 2019 sono stati considerati i valori di Impact Factor relativi al 2018. Per le altre pubblicazioni sono stati considerati i valori di Impact Factor della rivista nell'anno di pubblicazione.
- Il proprio H-index risulta pari a 14. Si precisa che, ai fini del calcolo di tale indice bibliometrico, è stato usato solo il database Scopus, disponibile mediante collegamento tramite la rete dell'Università degli Studi Magna Graecia.

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La sottoscritta dichiara di essere a conoscenza dell'art. 75 del D.P.R. 445/2000 del 28.12.2000, relativo alla decadenza dei benefici eventualmente conseguenti al provvedimento emanato qualora l'Amministrazione, a seguito di controllo, riscontri la non veridicità del contenuto della suddetta dichiarazione.

La sottoscritta ai sensi dell'art. 10 della Legge 675/1996 del 31.12.1996 (tutela della persona e di altri soggetti rispetto al trattamento dei dati personali) accorda il consenso affinché i propri dati possano essere trattati ed essere oggetto di comunicazioni a terzi al fine di provvedere agli adempimenti di obblighi di legge.

La sottoscritta allega fotocopia del passaporto in corso di validità.

Catanzaro, 24 Luglio 2019

FIRMA

