

**Francesco BIANCONI**  
*Curriculum vitae*

**Office**

Department of Engineering  
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## Personal details

Born: 17 July 1971, Perugia, Italy  
Gender: Male  
Citizenship: Italian

## Education

### University degrees

- Doctor of Philosophy, *Computer-aided Mechanical Design*  
Università degli Studi di Perugia, Perugia, Italy Jan. 2001
- Master of Engineering, *Mechanical Engineering*  
Università degli Studi di Perugia, Perugia, Italy Apr. 1997

### Other courses

- *Applied Data Science Specialization*, IBM/Coursera Jun. 2020

## Languages

- English: Advanced
  - Cambridge CB CAE (grade A – 81/100) Apr. 2013
  - iBT TOEFL (104/120) Dec. 2011
- Spanish: Advanced
  - DELE intermediate (95/100) May 2006
- Italian: Native

## IT & Programming skills

- Programming languages & VCS
  - C, C++, Java, Python and Git
- Digital typesetting & office automation
  - Microsoft Excel, Microsoft Word and  $\text{\LaTeX}$
- Scientific packages & data visualisation tools
  - Matlab, Mathematica and Tableau
- CAD/CAE
  - Autodesk AutoCAD, Autodesk Inventor and SolidWorks

## Employment

- *Associate professor*, Department of Engineering, Università degli Studi di Perugia, Italy  
Jul. 2015–present
- *Assistant professor*, Department of Engineering, Università degli Studi di Perugia, Italy  
Nov. 2000–Jun. 2015
- *CAD Engineer* (internship), Umbra Cuscinetti SpA, Foligno (Italy) Oct.–Nov. 1998
- *Secondary school teacher* (Textile Technologies), Istituto Professionale Statale per l'Industria e L'Artigianato, Perugia (Italy) Dec. 1997–Jun. 1998
- *Secondary school teacher* (Civil and Industrial Plants), Istituto Tecnico Statale per Geometri, Perugia (Italy) Dec. 1997–Jun. 1998
- *Secondary school teacher* (Applied Mechanics), Istituto Tecnico Industriale Statale, Foligno (Italy) Jun.–Jul. 1997

## Visiting positions

- *Academic visitor*, School of Mathematics, Computer Science and Engineering; City, University of London, United Kingdom Sep.–Dec. 2018
- *Academic visitor*, School Electronic Engineering and Computer Science; Queen Mary, University of London, United Kingdom Sep.–Dec. 2015
- *Visiting research fellow*, School of Computing Sciences; University of East Anglia, United Kingdom Oct.–Dec. 2010
- *Visiting researcher*, School of Industrial Engineering, Department of Engineering Design; Universidade de Vigo, Spain  
Jun.–Jul. 2009  
Sep. 2007  
Sep. 2006  
Sep. 2005

# Teaching

## Undergraduate courses

- *Computer skills* (2 CFU<sup>1</sup>), Università degli Studi di Perugia, Department of Engineering, BEng Mechanical Engineering 2012–present
- *Technical Drawing* (5 CFU) + *Computer skills* (2 CFU), Università degli Studi di Perugia, Department of Engineering, BEng Industrial Engineering 2005–present
- *Technical Drawing* (6 CFU) + *Computer skills* (2 CFU), Università degli Studi di Perugia, Department of Engineering, BEng Management Engineering 2017–present
- *Machine Drawing* (10 CFU) + *Computer skills* (2 CFU), Università degli Studi di Perugia, Department of Engineering, BEng Mechanical Engineering 2008–2012
- *Machine Drawing* (6 CFU) Università degli Studi di Perugia, Department of Engineering, BEng Mechanical Engineering 2000–2007
- *Technical Drawing* (5 CFU) Università degli Studi di Perugia, Department of Engineering, BEng Materials Engineering 2000–2004
- *CAD Laboratory* (2 CFU) Università degli Studi di Perugia, Department of Engineering, BEng Materials Engineering 2003–2005

## Post-graduate courses

- *Product Design and Development* (6 CFU), Università degli Studi di Perugia, Department of Engineering, MEng Industrial Engineering 2009–2010
- *Design Methods of Industrial Engineering* (6 CFU), Università degli Studi di Perugia, Department of Engineering, MEng Mechanical Engineering 2008–2009

## Post-master courses and continuous education

- *Computer-aided Design* (2,75 CFU), Università degli Studi di Perugia, Graduate Teacher Training Programme 2005
- *Computer-aided Design* (4 CFU), Università degli Studi di Perugia, Faculty of Engineering post-master course in Materials Engineering 2004
- *Technical Drawing I* (1,75 CFU), Università degli Studi di Perugia, Graduate Teacher Training Programme 2002
- *Technical Drawing II* (2 CFU), Università degli Studi di Perugia, Graduate Teacher Training Programme 2003

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<sup>1</sup>Stands for *Credito Formativo Universitario*. This is the unit used in the Italian higher education system to measure and assess the student's work and effort. The minimum number of required credits is 180 for a Bachelor's and 120 for a Master's degree.

## Short courses

- *Fundamentals of Engineering Drawing: Theory and Applications* (10h), FAIST Componenti S.p.A, Montone, Italy, Feb. 2011
- *Fundamentals of Pattern Recognition and Image Processing* (10h), Universidade de Vigo, Spain, Doctoral Programme in Environmental Engineering Jun. 2009
- *Introduction to Technical Drawing* (15h), Black & Decker Italia, Corciano, Italy Dec. 2008–Jan. 2009
- *Introduction to CAD/CAE* (10h), Master in Virtual Engineering, ITT s.c.a.r.l, Umbertide, Italy 2005
- *Introduction to Object-oriented Programming in C/C++*, Università degli Studi di Perugia, Italy, Doctoral Programme in Industrial Engineering Apr.–May 2004

## Talks

- *Advances in modelling and analysis of the human body by computational imaging* (with G. Pascoletti). Keynote lecture, 2<sup>nd</sup> International Congress on Engineering Sciences and Multidisciplinary Approaches, Istanbul, Turkey 18 Sep. 2021
- *Radiomics in medical imaging: an overview*. Invited talk, IET Webinar Recent advances in Medical Image Analysis 25 Jun. 2021
- *Texture and colour descriptors for visual recognition: historical overview and applications to computer vision and robotics*. Keynote lecture, The 2020 International Conference on Control, Automation and Diagnosis (ICCAD'20), Paris, France 7 Oct. 2020
- *Role of artificial intelligence techniques (automatic classifiers) in molecular imaging modalities in neurodegenerative diseases* (with B. Palumbo). Invited talk, short course in Big Data, Radiomics & Artificial Intelligence; Italian Association for Medical Physics (AIFM), Reggio Emilia, Italy 15-16 Dec. 2017
- *Towards a procedural model for CAD data exchange*; 5<sup>th</sup> workshop on Design Tools and Methods in Industrial Engineering, Pisa, Italy, 21-23 Mar. 2005
- *Collaborative CAD modeling and construction of augmented CAD models*; 4<sup>th</sup> workshop on Design Tools and Methods in Industrial Engineering, Erice, Italy 29 Sep.–1 Oct. 2003
- *Approaches for integration of CAD/CAM/CAE systems*; 3<sup>rd</sup> Workshop on Design Tools and Methods in Industrial Engineering, Firenze, Italy 27-28 Jun. 2002
- *Interface-based methods for data exchange among CAx systems*; 2<sup>nd</sup> Workshop on Design Tools and Methods in Industrial Engineering, Perugia, Italy 5-6 Jul. 2001
- *Collaborative design and data exchange through STL files*; 1<sup>st</sup> Workshop on Design Tools and Methods in Industrial Engineering, Parma, Italy Sep. 2000

## Seminars

- *Texture and colour descriptors for visual recognition: an overview of methods applications*. Doctoral programme in Industrial and Information Engineering, Università degli Studi di Perugia, Italy  
23 Jun. 2021
- *Hand-designed descriptors vs. pre-trained convolutional networks: a comparison of two strategies for colour texture classification*. School of Mathematics, Computer Science and Engineering; City, University of London, United Kingdom  
20 Nov. 2018
- *Texture description through histograms of equivalent patterns: A unifying Framework for LBP and related methods*. School of Computing Sciences, University of East Anglia, United Kingdom  
9 Dec. 2015
- *Texture description through histograms of equivalent patterns: A unifying Framework for LBP and related methods*. School of Electronic Engineering and Computer Science; Queen Mary, University of London, United Kingdom  
22 Sep. 2015
- *Introduction to computer vision*, School of Industrial Engineering, Universidade de Vigo, Spain  
21 Jan. 2014
- *Fundamentals of pattern recognition and colour image analysis*, School of Industrial Engineering, Universidade de Vigo, Spain  
27 Nov. 2012
- *Introduction to pattern recognition and computer vision with applications in the industry*, School of Industrial Engineering, Universidade de Vigo, Spain  
24 Jan. 2012
- *Colour vision and pattern recognition*. School of Industrial Engineering, Universidad de Vigo, Spain  
11 Jan. 2011
- *Automatic characterization of materials appearance through texture and colour analysis*. School of Computing Sciences, University of East Anglia, United Kingdom  
15 Oct. 2010
- *Data exchange among CAD/CAM/CAE systems: problems and perspectives*. Università degli Studi dell'Aquila, Italy  
16 Dec. 2004

## Tutorials

- *Colour texture analysis and classification* (with C. Cusano and P. Napoletano), 5<sup>th</sup> Computational Colour Imaging Workshop (CCIW'17), Milan, Italy  
29 Mar. 2017

## Supervision of PhD dissertations

- R. Bello-Cerezo *Colour texture classification at the end of the 'early' years: hand-designed descriptors or pre-trained convolutional neural networks?* Doctoral Programme in Industrial and Information Engineering, Università degli Studi di Perugia, Italy  
Apr. 2019

## Supervision of BSc and MSc theses

- Thirty BSc and MSc theses within the Department of Engineering, Università degli Studi di Perugia, Italy
- Eight MSc theses within the School of Industrial Engineering, Universidade de Vigo, Spain

## Publications

### Selected (sorted by date, newest first)

F. Bianconi and E. Brugnoli. Enumerating necklaces with transitions. *Bulletin of the Australian Mathematical Society*, 2021. In press

### Edited books

- [1] F. Bianconi, A. Fernández, and R.E. Sánchez-Yáñez, editors. *Texture and color in image analysis*. MDPI, 2021. Printed edition of the Special Issue Texture and Colour in Image Analysis, published in Applied Sciences

### Book chapters

- [1] F. Bianconi and A. Fernández. A unifying framework for LBP and related methods. In S. Brahmam, L. C. Jain, L. Nanni, and A. Lumini, editors, *Local binary patterns: New variants and applications*, volume 506 of *Studies in Computational Intelligence*, pages 17–46. Springer, 2014
- [2] J.N. Kather, R. Bello-Cerezo, F. Di Maria, G.W. van Pelt, W.E. Mesker, N. Halama, and F. Bianconi. Classification of tissue regions in histopathological images: Comparison between pre-trained convolutional neural networks and local binary patterns variants. In L. Nanni, S. Brahmam, R. Brat-tin, S. Ghidoni, and L.C. Jain, editors, *Deep learners and deep learner descriptors for medical appli-cations*, volume 186 of *Intelligent Systems Reference Library*, chapter 3, pages 95–115. Springer, 2020

### Journal papers

- [1] E. Chirikhina, A. Chirikhin, S. Dewsbury-Ennis, F. Bianconi, and P. Xiao. Skin characterizations by using contact capacitive imaging and high-resolution ultrasound imaging with machine learning algorithms. *Applied Sciences*, 11(18), sep 2021. Art. no. 8714
- [2] B. Palumbo, F. Bianconi, and I. Palumbo. Solitary pulmonary nodule: Is positron emission tomog-raphy/computed tomography radiomics a valid diagnostic approach? *Lung India*, 38(5):405–407, sep-oct 2021. Editorial
- [3] F. Bianconi, M.L. Fravolini, I. Palumbo, G. Pascoletti, S. Nuvoli, M. Rondini, A. Spanu, and B. Palumbo. Impact of lesion delineation and intensity quantisation on the stability of texture features from lung nodules on CT: A reproducible study. *Diagnostics*, 11(7), jul 2021. Art. no. 1224
- [4] F. Bianconi, M.L. Fravolini, S. Pizzoli, I. Palumbo, M. Minestrini, M. Rondini, S. Nuvoli, A. Spanu, and B. Palumbo. Comparative evaluation of conventional and deep learning methods for semi-automated segmentation of pulmonary nodules on ct. *Quantitative Imaging in Medicine and Surgery*, 11(7):3286 – 3305, jul 2021
- [5] F. Bianconi, A. Fernández, and R.E. Sánchez-Yáñez. Special issue texture and color in image analysis. *Applied Sciences*, 11(9), 2021. Art. no. 3801. Editorial
- [6] B. Palumbo, F. Bianconi, S. Nuvoli, A. Spanu, and M.L. Fravolini. Artificial intelligence tech-niques support nuclear medicine modalities to improve the diagnosis of Parkinson’s disease and Parkinsonian syndromes. *Clinical and Translational Imaging*, 9(1):19–35, feb 2021

- [7] F. Bianconi and E. Brugnoli. Enumerating necklaces with transitions. *Bulletin of the Australian Mathematical Society*, 2021. In press
- [8] F. Bianconi, J.N. Kather, and C.C. Reyes-Aldasoro. Experimental assessment of color deconvolution and color normalization for automated classification of histology images stained with hematoxylin and eosin. *Cancers*, 12(11), nov 2020. Art. no. 3337
- [9] B. Palumbo, F. Bianconi, I. Palumbo, M.L. Fravolini, M. Minestrini, S. Nuvoli, M.L. Stazza, M. Rondini, and A. Spanu. Value of shape and texture features from 18F-FDG PET/CT to discriminate between benign and malignant solitary pulmonary nodules: An experimental evaluation. *Diagnostics*, 10, sep 2020. Art. no. 696
- [10] E. Chirikhina, A. Chirikhin, P. Xiao, S. Dewsbury-Ennis, and F. Bianconi. In vivo assessment of water content, trans-epidermal water loss and thickness in human facial skin. *Applied Sciences*, 10(17), sep 2020. Art. no. 6139
- [11] C. Buratti, E. Belloni, F. Merli, and F. Bianconi. Experimental characterization of the color rendering properties of transparent monolithic aerogel. *Solar Energy*, 205:183–191, jul 2020
- [12] B. Palumbo, R. Capozzi, F. Bianconi, M.L. Fravolini, S. Cascianelli, S.G. Messina, G. Bellezza, A. Sidoni, F. Puma, and M. Ragusa. Classification model to estimate MIB-1 (Ki 67) proliferation index in NSCLC patients evaluated with 18F-FDG-PET/CT. *Anticancer Research*, 40(6):3355–3360, jun 2020
- [13] S. Nuvoli, A. Spanu, M.L. Fravolini, F. Bianconi, S. Cascianelli, G. Madeddu, and B. Palumbo. [123I]metaiodobenzylguanidine (MIBG) cardiac scintigraphy and automated classification techniques in Parkinsonian disorders. *Molecular Imaging and Biology*, 22(3):703–710, jun 2020
- [14] F. Bianconi, I. Palumbo, A. Spanu, S. Nuvoli, M.L. Fravolini, and B. Palumbo. PET/CT radiomics in lung cancer: An overview. *Applied Sciences*, 5(10), mar 2020. Art. no. 1718
- [15] F. Smeraldi, F. Bianconi, A. Fernández, and E. González. Partial order rank features in colour space. *Applied Sciences*, 10(2), jan 2020. Art. no. 499

## Conference proceedings

- [1] F. Bianconi. Experimental analysis of colour constancy and colour augmentation for painting classification by artistic genre: preliminary results. In *Proceedings of the 2nd International Conference Florence Heri-Tech: The Future of Heritage Science and Technologies, HERITECH 2020*, volume 949 of *IOP Conference Series: Materials Science and Engineering*, Florence, Italy, oct 2020. Art. no. 012065
- [2] F. Bianconi, M.L. Fravolini, I. Palumbo, and B. Palumbo. Shape and texture analysis of radiomic data for computer-assisted diagnosis and prognostication: an overview. In C. Rizzi, A.O. Andrisano, F. Leali, F. Gherardini, F. Pini, and A. Vergnano, editors, *Proceedings of the International Conference on Design Tools and Methods in Industrial Engineering (ADM)*, Lecture Notes in Mechanical Engineering, pages 3–14, Modena, Italy, sep 2019. Springer