PERSONAL INFORMATION

First name: Fulvio
Last name: LAVECCHIA

Affiliation
Politecnico di Bari (Polytechnic University of Bari)
Dipartimento di Meccanica Matematica e Management (Department of Mechanic, Mathematic and Management)
Address
Via Orabona 4 , 70125, Bari, Italy

+39 080 596 3463 ; +39 080 596 2846 +39 328 2918289

fulvio.lavecchia@poliba.it
https://www.dmmm.poliba.it/index.php/it/profile/75-flavecchia

Current Position: Associate Professor

Key words: Additive Manufacturing; 3D Printing; Fused Filament Fabrication, Material Extrusion, Reverse Engineering, Photogrammetry, Process Monitoring

- ORCID: https://orcid.org/0000-0002-7941-389X
- Google scholar profile: https://scholar.google.com/citations?hl=it&user=TtJWBD4AAAAJ
- Scopus ID 25628574800: https://www.scopus.com/authid/detail.uri?authorId=25628574800
- WoS ID AAP-2011-2020: Fulvio LAVECCHIA - Web of Science Researcher Profile
- SSD: IIND-04/A

Sex Male | *Date of birth* 06/09/1980 | *Nationality* Italian

WORK EXPERIENCE

(10/2021) **Associate Professor**
Polytechnic of Bari, Department of Mechanical Mathematic and Management
▪ Erasmus Coordinator of Mechanical Engineering
Scientific sector: IIND-04/A – "Tecnologie e Sistemi di lavorazione" – (Manufacturing systems)

(10/2018 to 10/2021) **Assistant Professor (RTD-b)**
Polytechnic of Bari, Department of Mechanical Mathematic and Management
Scientific sector: IIND-04/A – "Tecnologie e Sistemi di lavorazione" – (Manufacturing systems)

(10/2015 to 10/2018) **Assistant Professor (RTD-a)**
Polytechnic of Bari, Department of Mechanical Mathematic and Management
Department of Agricultural Sciences, Food, Natural Resources and Engineering (University of Foggia)
Scientific sector: IIND-04/A – "Tecnologie e Sistemi di lavorazione" – (Manufacturing systems)

(04/2015 to 10/2015) **Post-doctoral Researcher**
Polytechnic of Bari, Department of Mechanical Mathematic and Management
Scientific sector: IIND-04/A – "Tecnologie e Sistemi di lavorazione" – (Manufacturing systems)
Project: Micromachining, measurement and 3D scanning of micro components (MICROTRONIC project),
Title of the research "Study and implementation of a methodology based on photogrammetric techniques for the acquisition of micromachined parts"

(2014 to 2015) **Research Project consultant**
Polishape 3d srl
Research project "MIUR Start Up - PAC02L2_00101", Project title: "Contactless system for

augmented reality diagnostics of significant cultural interest artefacts with difficult accessibility" for Polishape 3D s.r.l..
Research project MIUR Start Up - PAC02L2_00101, entitled: "Contactless system for augmented reality diagnostics of artefacts of significant cultural interest and difficult accessibility"

(2012 to 2014) **Post-doctoral Researcher**

Polytechnic of Bari, Department of Mechanical Mathematic and Management

Research title “Micro-machining and micro-surface measurement for mechatronics”, topics covered: “Development of a micrometric scanning system based on close range photogrammetry”

EDUCATION AND TRAINING

(2008-2011) PhD in Advanced Production Systems

Polytechnic University of Bari

Department of Mechanics, Mathematics and Management

- Thesis Title: Improvement of Fused Deposition Modeling additive manufacturing, technology development to reduce production time, cost and to improve performance and surface finish

(2007) Master Degree in Management Engineering

Polytechnic University of Bari

Department of Mechanics, Mathematics and Management

- Thesis Title: Surface quality and cost analysis of hybrid molds made with FDM technology
-

NATIONAL QUALIFICATION

(2025-2037) National Scientific Qualification as Full Professor 09/B1 in IIND-04/A

(Abilitazione Scientifica Nazionale, ruolo Professore di Prima Fascia)

TEACHING ACTIVITIES

(Since 2023) Course “Additive Manufacturing e Reverse Engineering” (IIND-04/A, 6cfu) Master degree Mechanical Engineering” Politecnico di Bari

(Since 2022) Course “ Tecnologia della Produzione” (IIND-04/A, 6cfu) Bachelor Degree “Management Engineering” Università di Foggia- Politecnico di Bari

(from 2018 to2023) Course “Metodi Avanzati di Stampa 3D e Reverse Engineering” (IIND-04/A, 6cfu) Master degree Mechanical Engineering” Politecnico di Bari

(from 2015 to 2022) Course “Tecnologia della Produzione” (IIND-04/A, 6cfu) Bachelor Degree “Ingegneria dei Sistemi Logistici per l’Agro-alimentare” Università di Foggia-Politecnico di Bari

WORK ACTIVITIES

Main projects

- Scientific Coordinator: Consulting Agreement MasterLab srl and Politecnico di Bari “ Optimization of the process parameters of a multi-step system based on Binder Jetting, debinding, and sintering technology ”

- Scientific Coordinator: “Verifica Integrata e Stampa Intelligente Ottimizzata per la PRoduzione INdustriale Tridimensionale - VISIOPRINT 3D” - PR PUGLIA FESR FSE+ 2021-2027 –
- Scientific Coordinator: Consulting Agreement GE Avio S.r.l. and Politecnico di Bari “CAD-CAM innovative solutions for Laser Metal Deposition and Cold Spray repair process optimization and validation”
- Scientific Coordinator: call FRA titled “ Analisi dei parametri tecnologici di Parti Realizzate in Metal FFF ”
- Scientific Coordinator: call FRA titled “Micro-asportazione di truciolo per la realizzazione di Micro-Features”
- Scientific Coordinator: "Development of new soles with high slip resistance properties for the Ho.Re.Ca line”
- Researcher PON Project “S.I.ADD. – Soluzioni Innovative per la qualità e la sostenibilità dei processi di ADDitive manufacturing” COD. ID. ARS01_00806
- INTERREG IPA CBC ITALY–ALBANIA–MONTENEGRO PROGRAMME 3D-IMP-ACT (Virtual reality and 3D experiences to IMProve territorial Attractiveness, Cultural heritage, smart management and Touristic development);
- Participation in the activities of the research group of the Partnership Agreement between GE Avio S.r.l. and Politecnico di Bari - titled "DEVELOPMENT OF ADDITIVE REPAIR TECHNOLOGIES", SPECIFIC RESEARCH LINE TITLE: "Reverse Engineering of aeronautical components aimed at their repair with Laser Deposition (DL) and Cold Spray (CS)" in the "Apulia Repair Development Center" LABORATORY of GE Avio S.R.L. and Politecnico di Bari.
- Researcher of PON project 03PE_00067_4 “TEcnologie Produttive e Manutentive applicate ai Propulsori Aeronautici (TEMA)”.
- Participation in the activities of the research group of Microtronic laboratories “MICROlavorazioni laser e sensoristica di processo per la produzione di componenti meccaTRONICi”
- Researcher PON project 02_00576_3333604, "INNOVHEAD - Tecnologie innovative per riduzione emissioni, consumi e costi operativi di motori Heavy Duty", capofila MEDIS S.c.a.r.l. – Distretto Meccatronico Regionale della Puglia, per l'OR9.5 "Controllo dimensionale con scansione 3D ad accuratezza micrometrica".
- Participation in the activities of the international agreement between the Polytechnic University of Tirana (ALB) and the Polytechnic of Bari (I) for the co-tutorship of PhDs in "Advanced Production Systems" (XXV cycle) and "Mechanical and Management Engineering" (XXVII cycle) of the Polytechnic University of Bari and the PhD in "Mechanical Engineering" of the Faculty of Mechanical Engineering of the Polytechnic University of Tirana. The collaboration focused on the topics of "Additive Manufacturing by Material Deposition" and "New Optical Techniques for Reverse Engineering",
- Participation in the activities of the PRIN 2007 entitled: "Reverse Engineering for non-invasive diagnostics in Orthodontics: development of an automatic face measurement system based on photogrammetry". National scientific coordination: Politecnico di Bari.
- Participation in the activities of the project BURP - n. 107 of 25/08/2005, entitled “Time Compression for footwear: feasibility study for 3D modelling of components (lasts, toe-puffs, upper style lines) by Reverse Engineering”.
- Participation in the activities of the project BURP - no. 107 of 25/08/2005 entitled “Study and experimentation of hybrid moulds, for direct injection on uppers, realized by rapid prototyping technologies”.

PhD Course and Tutoring activities

- Member of the Board of Professors of the PhD Course on Mechanical And Energy Engineering.
- Since 2019 Erasmus Coordinator Incoming Student of Mechanical Engineering courses

- From the year 2020 to 2023: Tutor of the PhD student Pellegrini Alessandro for the “Aerospace Sciences and Engineering” PhD school of the Politecnico di Bari XXXVI cycle.
- From the year 2021 to 2024: Tutor of the student Marco Lafirenza for the PhD in “Mechanical and Management Engineering” PhD school of the Polytechnic of Bari XXXVII cycle.
- From the year 2021 to 2024: Tutor of the student Devito Fabrizia for the PhD in “Sustainable Development and Climate Change”, IUSS Pavia.
- Since the year 2023: Tutor of the student Raniero Pirlo for the PhD in “Mechanical and Management Engineering” PhD school of the Polytechnic of Bari XXXVIII cycle.
- Since the year 2024: Tutor of the student Francesco De Palma for the PhD in “Management Engineering” PhD school of the Polytechnic of Bari XXXVIII cycle
- Since the year 2024: Tutor of the student Diana Negrea for the PhD in “Mechanical Engineering” PhD school of the Polytechnic of Bari XLI cycle
- Supervisor and Co-supervisor of 55 thesis for master and bachelor’s degree in the field of Reverse Engineering, 3D metrology for industrial applications, Additive Manufacturing, Optical in-process monitoring of Additive Manufacturing processes.

Technology transfer

- “Founding partner and active member of Polishape3D Ltd, a spin-off of the Polytechnic University of Bari. The company designs, develops, and provides 3D scanning systems for any type of application.”
-

Awards

- from 2014 to 2017: CIRP Research Affiliate (Collège International pour l’étude scientifique des techniques de Production mécanique – ora International Academy for Production Engineering)

Editorial activity

- Academic Editors of "Advances in Materials Science and Engineering" journal, Hindawi
- Academic Editors of " Journal of Manufacturing and Materials Processing ", MDPI

Patents

- "DEVICE AND METHOD OF PHOTOGRAMMETRIC SCANNING". Inventors: Galantucci L.M., Percoco G., Lavecchia F.. Application MI2012A000811 of 11/5/2012, Patent Grant n.0001412901 of 23/12/2014, Polishape 3D srl. (not active)

ADDITIONAL INFORMATION

Publications

Total number of publications in peer-review journals (Scopus) 42
Total number of publications in conference proceedings (Scopus) 19
Total number of publications in book chapter (Scopus) 3
Total number of citations (Scopus) 1683
H index (Scopus) 21

1. Cicero, S. ,Arrieta, S., Devito, F.,Arroyo, B., Lavecchia, F., Fracture Behavior of Additively Manufactured Carbon Fiber Reinforced Acrylonitrile-Styrene-Acrylate Containing Cracks and Notches, Journal of Composites ScienceOpen source preview, 2025, 9(4), 185, https://doi.org/10.3390/jcs9040185
2. Devito, F.,Natalicchio, A.,Lavecchia, F., Dassisti, M., Advancing sustainability in Electron and laser beam powder Bed Fusion technologies via Innovation: Insights from patent analysis,Computers and Industrial EngineeringOpen source preview, 2025, 201, 10.1016/j.cie.2024.110794
3. Pirlo, R., Guerra, M.G., Lavecchia, F.,Galantucci, L.M., Evaluation of a photogrammetry-based scanner for measuring small-sized features in an additive manufacturing repair process chain, International Journal of Advanced Manufacturing TechnologyOpen source preview, 2025, 136(11), pp. 5581–5598, 10.1007/s00170-025-15153-2
4. Devito, F., Mazzarisi, M., Dassisti, M., Lavecchia, F. “Causal technological model for

predicting void fraction and energy consumption in material extrusion process of polylactic acid", Journal of Manufacturing Processes, Vol 129, pp. 187–201, 2024, DOI https://doi.org/10.1016/j.jmapro.2024.08.061

5. Lafirenza, M.,Guerra, M.G.,Lavecchia, F.,Galantucci, L.M., In-process evaluation of layer defects and surface topography on material extruded parts through a novel point cloud functional analysis, Measurement Science and TechnologyOpen source preview, 2025, 36(1), 016229, 10.1088/1361-6501/ad9b41
6. Mazzarisi, M., Guerra, M.G., Latte, M., ... Lavecchia, F., Dassisti, M., In-Process Detection of Defects on Parts Produced by Laser Metal Deposition Using Off-Axis Optical Monitoring, Lecture Notes in Mechanical EngineeringOpen source preview, 2025, pp. 755–762
7. Pellegrini, A.,Lavecchia, F., Guerra, M.G., Galantucci, L.M., Analysis of Microstructure and Mechanical Properties of CoCrMo Alloys Processed by Metal Binder Jetting Multi-Step Technique, Journal of Manufacturing and Materials Processing Open source preview, 2024, 8(6), 292, 10.3390/jmmp8060292
8. Devito, F. , Copani, G., Natalicchio, A., Lavecchia, F, Olabi, A.-G., Dassisti, M. Business Models and Advanced Additive Manufacturing strategies for better sustainability, Energy NexusOpen source preview, 2024, 16, 10.1016/j.nexus.2024.100337
9. Devito, F., Mazzarisi, M., Dassisti, M., Lavecchia, F., Causal technological model for predicting void fraction and energy consumption in material extrusion process of polylactic acid, Journal of Manufacturing ProcessesOpen source preview, 2024, 129, pp. 187–201, 10.1016/j.jmapro.2024.08.061.
10. Pellegrini, A., Lavecchia, F., Guerra, M.G., "Additive manufacturing of copper parts using extrusion and sinter-based technology: evaluation of the influence of printing parameters and debinding method" Rapid Prototyping Journal, Vol.30(7), pp. 1451–1461, ISSN 13552546, 2024. DOI https://doi.org/10.1108/RPJ-02-2024-0081
11. Lavecchia, F., Pellegrini, A., Galantucci, L.M., Comparative study on the properties of 17-4 PH stainless steel parts made by metal fused filament fabrication process and atomic diffusion additive manufacturing, Rapid Prototyping Journal, Vol. 29(2), pp. 393–407, ISSN 13552546, 2023. DOI https://doi.org/10.1108/RPJ-12-2021-0350
12. Lavecchia F., Guerra M.G., Galantucci L.M. "Chemical vapor treatment to improve surface finish of 3D printed polylactic acid (PLA) parts realized by fused filament fabrication", Progress in Additive Manufacturing, Vol 7, Issue 1, pp 65 – 75, ISSN 23639512, 2022. DOI https://doi.org/10.1007/s40964-021-00213-2
13. Guerra, M.G., Errico, V., Fusco, A., ... Campanelli, S.L., Galantucci, L.M., "High resolution-optical tomography for in-process layerwise monitoring of a laser-powder bed fusion technology", Additive Manufacturing, 55, 102850, ISSN 22148604, 2022, DOI https://doi.org/10.1016/j.addma.2022.102850
14. Galantucci, LM, Pesce, M, Lavecchia, F, "A powerful scanning methodology for 3D measurements of small parts with complex surfaces and sub millimeter-sized features, based on close range photogrammetry", Precision Engineering, Vol. 43, pp 211-219, ISSN: 01416359, 2016. DOI https://doi.org/10.1016/j.precisioneng.2015.07.010
15. Galantucci, LM, Pesce, M, Lavecchia, F, "A stereo photogrammetry scanning methodology, for precise and accurate 3D digitization of small parts with sub-millimeter sized features" CIRP Annals – Manufacturing Technology 64, pg. 507-510, Elsevier, ISSN: 00078506, 2015. DOI https://doi.org/10.1016/j.cirp.2015.04.016
16. Galantucci, L.M., Lavecchia, F., Percoco, G., Raspatelli, S., "New method to calibrate and validate a high-resolution 3D scanner, based on photogrammetry", Precision Engineering, Volume 38, Issue 2, April, pp. 279-291, ISSN: 01416359, 2014. DOI https://doi.org/10.1016/j.precisioneng.2013.10.002
17. Galantucci L.M., Lavecchia F., Percoco G., "Quantitative analysis of a chemical treatment to reduce roughness of parts fabricated using fused deposition modelling", CIRP Annals – Manufacturing Technology 59, pp. 247-250, Elsevier, ISSN: 00078506, 2010. DOI https://doi.org/10.1016/j.cirp.2010.03.074
18. Galantucci L.M., Lavecchia F., Percoco G., "Experimental study aiming to enhance the surface finish of fused deposition modelled parts", CIRP Annals – Manufacturing Technology 58, pg. 189-192, Elsevier, ISSN: 00078506, 2009. DOI https://doi.org/10.1016/j.cirp.2009.03.071

data provided in this CV

Bari 25/11/2025