

GABRIELE MARIA FORTUNATO

Place and date of birth: Agropoli – Italy, October 15th 1991

Gender: Male

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Research quality indicators: h-index=10; citations=329 (Scopus August 29th /2024)

WORKING EXPERIENCE

Jan 2023 - present **Assistant professor (RTDA), Dept. of Information Engineering, University of Pisa**

Jun 2022 – Dec 2022 **Research Grant, Research Centre “E. Piaggio”, University of Pisa**

Dec 2021 – May 2022 **Research Fellowship, Department of Information Engineering, University of Pisa**

ACADEMIC STUDIES

Nov 2018 – Oct 2021 **PhD in Information Engineering** obtained at University of Pisa on 5th May 2022 with the PhD thesis “Robotic platform for in situ bioprinting” - **Evaluation:** Ottimo cum laude

Jul 24th 2018 **Master’s degree in Biomedical Engineering** – Industrial Curriculum, University of Pisa – Department of Information Engineering - **Final degree mark:** 109/110

Apr 24th 2015 **Bachelor’s degree in Biomedical Engineering** - Industrial Curriculum, University of Pisa – Department of Information Engineering - **Final degree mark:** 100/110

PROFESSIONAL QUALIFICATION

Professional qualification of engineer achieved in Pisa on February 19th 2019

SCIENTIFIC POSITIONS

Apr 2023 - present Youth editorial board member, “ACCSscience Publishing, International Journal of Bioprinting”

Feb 2023 - present Youth editorial board member, “ELSP, Biofunctional materials” journal

Mar 2023 – Dec 2023 Guest editor in the special issue “New Insights into the Development of In Situ Bioprinting for Tissue Engineering”. Journal “MDPI, Bioengineering” (IF 4.6).

Mar 2023 - present Review Editor on the Editorial Board of Biological Modeling and Simulation (specialty section of Frontiers in Molecular Biosciences e Frontiers in Applied Mathematics and Statistics).

Sep 2022 - present Review Editor on the Editorial Board of Biofabrication (specialty section of Frontiers in Bioengineering and Biotechnology).

25th-28th Sep 2022 Member of the Scientific Advisory Committee at the International Conference on Biofabrication 2022, Montecatini Terme, Italy

TEACHING ACTIVITY

Feb 2023 - present

- Co-teacher - Prosthesis (6 CFU) - *Bachelor Degree in Biomedical Engineering, University of Pisa*
- Teacher - Bioengineering principles (6 CFU) - *Bachelor Degree in Biomedical Engineering, University of Pisa*

Jan 2024 – Feb 2024 Teacher – PhD course “Additive manufacturing on non-planar surfaces: operating workflow from surface scanning to 3d printing” (6 CFU), *PhD Program in Information Engineering, University of Pisa*

Nov 2018-May 2022 Teaching support:

- Prosthesis (6 CFU) - *Bachelor Degree in Biomedical Engineering, University of Pisa, Academic years 2019-20, 2020-21, 2021-22*
- Bioengineering principles for the development of medical phantoms – *Master degree in Medicine and Surgery, Academic years 2019-20, 2021-22*

TUTORING ACTIVITY

Sept 2023 - present	Tutor of the PhD student Andrea Guerra (PhD program in Information Engineering, University of Pisa). Research filed: robotic-based 4D printing
Nov 2018 - present	Tutor of 12 master (Master's degree in Biomedical Engineering) and 15 bachelor students (Bachelor's degree in Biomedical Engineering), University of Pisa

PERSONAL SKILLS

Spoken languages	Italian (mother tongue); English (C1); French (basic knowledge)
Research interests	Biofabrication technologies; Bioprinting; Robotic-based additive manufacturing; Combination of micro- and nano- fabrication technologies; Design of bioreactors; Electro-mechanical prototyping; Design and development of medical devices
Team member in Scientific grants	<ul style="list-style-type: none">• EU Project Manunet “KERAPACK: A novel integrated approach for the reduction, recycling and reuse of poultry feathers by keratins based packaging manufacturing”.• EU Project M-ERA.net “BIOMEMBRANE: Bioengineered in vitro model of retinal pigmented epithelium of human eye”• International cooperation project “IMAGO – Conjunct work group Italy-Mexico on the Biofabrication for the development of a multimaterial and multiscale bioprinting system for the development of muscular tissue 3D in vitro models.• H2020 Project GIOTTO (Active aGeIng and Osteoporosis: The next challenge for smart nanobiOmaterials and 3D technologies GA814410)• Project PRIN2017 “Vision: Development and Promotion of the Levulinic acid and Carboxylate platforms by the formulation of novel and advanced PHA-based biomaterials and their exploitation for 3D printed green-electronics applications.• Project PRA 2020-2021, mOSAic: Open Source as key enabling approach for Artificial Intelligence in healthcare.• Next Generation EU project ECS00000017 Tuscany Health Ecosystem (THE, PNRR, Spoke 4: Nanotechnologies for diagnosis and therapy)

AWARDS

30 th June 2023	Best Doctoral Thesis Award in the field of 'Civil Engineering and Architecture, Industrial and Information Engineering' from the University of Pisa
15 th September 2022	GNB Awards 2022: PhD thesis award “Dipartimento di Ingegneria Industriale e dell'Informazione” from University of Pavia
16 th September 2022	XL Scuola annuale di bioingegneria, Bressanone - Italy: Best project award: LIViM: lung in vitro model
11 th September 2019	GNB Awards 2019: Master thesis award “Laboratorio di Modelli, Segnali e Controllo di Sistemi Biologici” from University of Padova
15 th December 2017	1 st Place UBORA First Design School “Reducing child mortality”, Nairobi, Kenya.

SCIENTIFIC SOCIETIES MEMBERSHIP

June 2021 - present	Member of the International Society for Biofabrication
June 2019 - present	Member of the National Group of Bioengineering (Italy)

INTERNATIONAL COLLABORATIONS

Sept 2023 - present	Prof. Christos Boutopoulos, University of Montreal: collaboration on the use of OCT optic-fiber distance sensors to increase the positioning accuracy in robotic-based in situ bioprinting applications. Collaboration strengthened by an internship period focusing on the previous topics of the PhD student Shakiba Davani (from the University of Montreal) at the University of Pisa from June to July 2024.
May 2023 - present	Prof. Tomasz Juengst, University of Wurzburg: collaboration on the path planning for robotic-based additive manufacturing for melt-electrowriting and bioprinting applications.

RELEVANT PUBLICATIONS

Journal articles

- **Fortunato, G.M.**, Batoni, E., Pasqua, I., Nicoletta, M., Vozzi, G., De Maria, C. (2023). *Automatic photo-crosslinking system for robotic-based in situ bioprinting*. ACS Biomaterials Science & Engineering
- **Fortunato, G.M.**, Sigismondi, S., Nicoletta, M., Condino, S., Montemurro, N., Vozzi, G., Ferrari, V., De Maria, C. (2023). *Analysis of the Robotic-Based In Situ Bioprinting Workflow for the Regeneration of Damaged Tissues through a Case Study*. Bioengineering, 10, 560.
- **Fortunato, G. M.**, Nicoletta, M., Batoni, E., Vozzi, G., & De Maria, C. (2023). *A fully automatic non-planar slicing algorithm for the additive manufacturing of complex geometries*. Additive Manufacturing, 69, 103541.
- **Fortunato, G. M.**, Bonatti, A. F., Batoni, E., Macaluso R., Vozzi, G., De Maria, C. (2022). *Motion compensation system for robotic based in situ bioprinting to balance patient physiological movements*. Bioprinting, e00248
- **Fortunato, G. M.**, Batoni, E., Bonatti, A. F., Vozzi, G., De Maria, C. (2022). *Surface reconstruction and tissue recognition for robotic-based in situ bioprinting*. Bioprinting, e00195
- **Fortunato, G. M.**, Rossi, G., Bonatti, A. F., De Acutis, A., Buenrostro, C. M., Vozzi, G., & De Maria, C. (2021). *Robotic platform and path planning algorithm for in situ bioprinting*. Bioprinting, e00139
- Agarwal, T., **Fortunato, G. M.**, Hann, S. Y., Ayan, B., Vajanthri, K. Y., Presutti, D., Cui, H., Chan, A. H. P., Costantini, M., Onesto, V., Di Natale, C., Huang, N. F., Makvandi, P., Shabani, M., Maiti, T. K., Zhang, L. J., De Maria, C. (2021). *Recent Advances in Bioprinting Technologies for Engineering Cardiac Tissue*. Materials Science and Engineering: C, 112057
- Wu, Y., **Fortunato, G. M.**, Okesola, B. O. Pellerej di Brocchetti, F. L., Suntornnond, R., Connelly, J., De Maria, C., Rodriguez-Cabello, J. C., Vozzi, G., Wang, W., Mata, A. (2021). *An interfacial self-assembling bioink for the manufacturing of capillary-like structures with tuneable and anisotropic permeability*. Biofabrication
- Cendrero, A.M., **Fortunato, G.M.**, Munoz-Guijosa, J.M., De Maria, C., Díaz Lantada, A. (2021). *Benefits of Non-Planar Printing Strategies Towards Eco-Efficient 3D Printing*. Sustainability, 13(4), 1599
- De Maria, C., **Fortunato, G. M.**, Chiesa, I., Vozzi, G. (2020). *Microfabricated and multilayered PLGA structure for the development of co-cultured in vitro liver models*. Bioprinting, e00084
- Chiesa, I., De Maria, C., Lapomarda, A., **Fortunato, G. M.**, Montemurro, F., Di Gesu, R., Tuan, R. S., Vozzi, G., Gottardi, R. (2020). *Endothelial cells support osteogenesis in an in vitro vascularized bone model developed by 3D bioprinting*. Biofabrication, 12(2), 025013
- Lapomarda, A., De Acutis, A., Chiesa, I., **Fortunato, G. M.**, Montemurro, F., De Maria, C., Mattioli Belmonte, M., Gottardi, R., Vozzi, G. (2019). *Pectin-GPTMS based biomaterial: toward a sustainable Bioprinting of 3D scaffolds for Tissue Engineering application*. Biomacromolecules, 21(2), 319-327
- **Fortunato, G. M.**, Da Ros, F., Bisconti, S., De Acutis, A., Biagini, F., Lapomarda, A., Magliaro, C., De Maria, C., Montemurro, F., Bizzotto, D., Braghetta, P., Vozzi, G. (2019). *“Electrospun structures made of a hydrolyzed keratin-based biomaterial for development of in vitro tissue models”*. Frontiers in Bioengineering and Biotechnology, 7, 174.
- Chiesa, I., **Fortunato, G. M.**, Lapomarda, A., Di Pietro, L., Biagini, F., De Acutis, A., Tinè, M. R., De Maria, C., Vozzi, G. (2019). *“Ultrasonic mixing chamber as an effective tool for the biofabrication of fully graded scaffolds for Interface Tissue Engineering”*. The International journal of artificial organs, 0391398819852960.
- **Fortunato, G. M.**, De Maria, C., Eglin, D., Serra, T., Vozzi, G. (2018). *“An ink-jet printed electrical stimulation platform for muscle tissue regeneration”*. Bioprinting, 11, e00035.

BOOK CHAPTERS

- I. Chiesa, A. F. Bonatti, A. De Acutis, **G. M. Fortunato**, G. Vozzi, C. De Maria (2023): “*4D printing in pharmaceuticals*”, book chapter in Additive Manufacturing in Pharmaceuticals (pp. 271-291). Singapore: Springer Nature Singapore.
- **G. M. Fortunato**, A. F. Bonatti, S. Micalizzi, I. Chiesa, E. Batoni, A. De Acutis, C. De Maria, G. Vozzi (2022): “*In situ bioprinting - current applications and future challenge*”, Additive Manufacturing in Biomedical Applications, Vol 23A, ASM Handbook, Edited By Roger J. Narayan, ASM International, p 225–236
- A. F. Bonatti, **G. M. Fortunato**, C. De Maria, G. Vozzi (2022): “*Bioprinting technologies: an overview*”, book chapter in “Bioprinting: from multidisciplinary design to emerging opportunities”, Bioprinting, 19-49
- L. Di Pietro, **G. M. Fortunato**, E. Botte, C. De Maria. (2022). “*Open-Source Medical Devices as Tools for Teaching Design, Standards and Regulations of Medical Technologies*” in Engineering Open-Source Medical Devices (pp. 219-242). Springer, Cham.

CONFERENCES AND INVITED PRESENTATIONS

Invited presentations

- “3D printing of tissues and organs”, 46° National Congress of the Italian Society for Organ and Tissue Transplant, Rome (Italy), 8-10 October 2023
- **Keynote presentation**: “Robotic-based in situ bioprinting for the regeneration of damaged tissues”, International Conference on Biofabrication 2022, 25-28 September 2022, Montecatini Terme, Italy.
- “Advances in *in situ* bioprinting” IV Workshop Winter school bioprinting, 14 February 2020, Pavia, Italy

Oral presentations

- International conference on Biofabrication 2023, Saskatoon, Canada, 17-20 Settembre 2023: G.M. Fortunato, M. Nicoletta, A. Guerra, E. Batoni, G. Vozzi and C. De Maria. “A fully automatic non-planar slicing algorithm for in situ bioprinting applications”
- International conference on Biofabrication 2023, Saskatoon, Canada, 17-20 Settembre 2023: G.M. Fortunato, I. Pasqua, E. Batoni, M. Nicoletta, G. Vozzi and C. De Maria. “Automatic photo-crosslinking system for robotic-based in situ bioprinting”
- International conference on Biofabrication 2021, Wollongong, Australia, 27-29 Settembre 2021, virtual event: G.M. Fortunato, A. F. Bonatti, E. Batoni, G. Rossi, A. De Acutis, G. Vozzi and C. De Maria. “Robotic arm biofabrication platform for *in situ* bioprinting”

ABROAD EXPERIENCES

May – Jul 2021

Poietis company (Pessac, France): PhD traineeship for the testing of measurement systems to improve the positioning accuracy of Poietis NGB-R robotic biofabrication system.

Apr – Jun 2018

AO FOUNDATION, AO Research Institute, Davos Platz, Switzerland: Master’s thesis traineeship for the design of an electrical stimulation device for muscle tissue regeneration.

Dec 2017

UBORA First Design School, ‘Reducing Child mortality’, Nairobi, Kenya. 1st place Design School award with the project “Phototherapy device to treat the infant jaundice”.

Pisa, Italy – August 29th 2024

Gabriele Maria Fortunato
