

LORENZO CIVILLA, MSc

PhD STUDENT
MEDICAL UNIVERSITY OF VIENNA

Contacts

Mobile: +39 3914243140

Email: lorenzo.civilla@meduniwien.ac.at | civilla.lorenzo@gmail.com

ABOUT ME

I am a passionate and dedicated researcher in Biomedical Engineering at the Medical University of Vienna working in the field of 3D printing, augmented reality and simulations for clinical training and preoperative planning. I researched in close relation with clinicians of the Department of Neurosurgery, Division of Nephrology and Dialysis, and Paediatric cardiac surgery. The developed technologies have translational applications from international training courses to single case and case series of preoperative planning.

WORK EXPERIENCE

- 11.2023 – today **PhD Student** at Medical University of Vienna,
Supervisor: Prof. Francesco Moscato, PhD
- 02.2021 – 11.2023 Research Associate for Medical University of Vienna,
PI: Prof. Francesco Moscato, PhD
- 2018 – 2020 Promotional employments

EDUCATION

- 11.2023 – today **PhD Student** at Medical University of Vienna in
Biomedical Engineering
- 09.2019 – 12.2021 Master Degree in Biomedical Engineering,
Biotechnologies for Cells and Tissues from
Politecnico di Milano: 108/110
- 09.2016 – 07.2019 Bachelor Degree in Biomedical Engineering from
Università Politecnica delle Marche: 110/110 cum laude



SCIENTIFIC PUBLICATIONS

- 2024 An evaluation of physical and augmented patient-specific intracranial aneurysm simulators on microsurgical clipping performance and skills: a randomized controlled study
Philippe Dodier, MD, PhD, **Lorenzo Civilla, MSc**, Ammar Mallouhi, MD, Lukas Haider, MD PhD, Anna Cho, MD, Philip Lederer, MD, Wei-Te Wang, MD, Christian Dorfer, MD, Karl Rössler, MD, Markus Koenigshofer, MSc, Ewald Unger, Maria-Chiara Palumbo, Alberto Redaelli, PhD, Josa M. Frischer,

MD, PhD, Francesco Moscato, PhD
Focus Neurosurgery, January 2024
(<https://doi.org/10.3171/2023.10.FOCUS23640>)

- 2024 Development and Assessment of Case-Specific Physical and Augmented Reality Simulators for Intracranial Aneurysm Clipping
Lorenzo Civilla, MSc, Philippe Dodier, MD, PhD, Maria Chiara, Palumbo, MSc, Alberto C.L. Redaelli PhD, Markus Koenigshofer, MSc, Ewald Unger, Torstein R. Meling, MD, PhD, Nikolay Velinov, MD, PhD, Karl Rössler, MD, Francesco Moscato, PhD
in peer review
- 2024 Wrist Tremor Assessment in Neurosurgical Residents Using a Smartwatch
Laurenz Berger, Msc, **Lorenzo Civilla, MSc**, Philippe Dodier, MD, PhD, Karl Rössler, MD, Francesco Moscato, PhD
in peer review
- 2021 An integrated lumped-parameter model of the cardiovascular system for the simulation of acute ischemic stroke: description of instantaneous changes in hemodynamics
Lorenzo Civilla, MSc, Agnese Sbrollini, PhD, Laura Burattini, PhD, Micaela Morettini, PhD
Mathematical Biosciences and Engineering, May 2021. doi:
<http://dx.doi.org/10.3934/mbe.2021200>

PROJECTS

- 02/2021 - today Development of a 3D printed Unruptured Intracranial Aneurysm clipping simulator
- 02.2021 – today Development of a digital holographic intracranial aneurysm simulator for HoloLens 1/2
- 07.2022 – today Development of a vascular fistula simulator for training of cannulation for dialysis access
- 05.2022 – today Development of a 3D printed Unruptured Intracranial Aneurysm endovascular treatment simulator
- 02.2022 – today Development of new generations of intracranial aneurysm clips
- 10.2023 – today Development of 3D models, animations and simulations of vertical hemispherotomy
- 07.2023 Development of Augmented Reality LVAD Positioning in Pediatric cases application for HoloLens 2
05. – 07.2019 Development of a cardiovascular computational model for the evaluation of pressure change in a case of ischemic stroke

CLINICAL TRIALS

- 09.2022 – today Prospective clinical preoperative trial involving the use of aneurysm clipping simulator for preoperative planning of clipping surgeries

02. – 04.2022 Prospective, randomized, controlled clinical training trial involving neurosurgical residents and expert neurosurgeons with objective skills assessment

PRESENTATIONS

Oral presentations

11.2023 Ludwig Boltzmann Gesellschaft Innovation in Health (Vienna, AT)
09.2023 EANS Vascular Section meeting 2023 (Marseille, FR)
08.2023 49th ESAO – IFAO Annual Congress (Bergamo, IT)
10.2022 Medical 3D-Printing and Innovative Technologies (Vienna, AT)
12.2021 SOFA Week (Digital)

Poster presentations

09.2023 EANS Annual Congress 2023 (Barcellona, SP)

Non first author presentations

09.2023 EANS Annual Congress 2023 (Barcellona, SP)
10.2022 ÖGNC Annual Congress (Vienna, AT)

STUDENTS SUPERVISION

03. – 06.2023 Supervision of Master Thesis “Characterization of materials for the replica of microvascular phantoms” (Maria Riviello, BSc)
11.2022 Supervision of Training Internship (Eleana Deduytsche)

GRANTS AND FUNDING

11.2023 Hochschuljubiläumsgrant for FSI simulations of Unruptured Intracranial Aneurysms: €19.200
05.2023 Austria Wirtschaftsservice Gesellschaft „Prototypenförderung für Universitäten und Fachhochschulen“: €35.000 for prototyping patent proposal n. 102023000010689

Phocus grant

AWARDS

2021 Abroad Thesis Scholarship winner (Politecnico di Milano)
2021 Scholarship for Alumni 2018/2019 (INPS)

INTELLECTUAL PROPERTIES

2023 Patent Presentation n. 102023000010689 (Pending)
2023 Disclosure of new aneurysm clip design to MedUni Wien

ICT SKILLS

Development: Unity base / Unity for Hololens / Blender
AR: Hololens 1 / 2 / Vuforia / MRTK
Coding: Visual Studio XML / Python / C / C# / MATLAB
Segmentation: 3D Slicer / Materialise Mimics / Freesurfer
OS: Microsoft / Ubuntu / RedHat / Oracle VirtualMachine / Android
Mesh: Meshmixer / MeshLab / Gmsh
CAD: Materialise Magics / Fusion 360 / SketchUp
Simulation: Ansys / SOFA Framework / VMD + NAMD
Imaging: CT / CTA / MRI
Photo/Video: GIMP / Darktable / DaVinci Resolve
General: Office Complete Suite / ECDL

LANGUAGES

Italian: mother tongue English: professional C1 German: Base A1

I authorize the processing of my personal data in accordance with Legislative Decree No. 196 of June 30, 2003 and the GDPR (EU Regulation 2016/679).

15.04.2024 Lorenzo Civilla

