Personal Info

- Born in Gallarate (VA), Italy, on April 15th 1992
- Resident in Milan, Italy, 20133

Contacts:
- mobile: +393478068310
- e-mail: lorenzo.gianquintieri@polimi.it

Languages:
- ITALIAN:
  native language
- ENGLISH:
  writing – excellent
  speaking – excellent
- FRENCH:
  writing – school level
  speaking – school level

Soft skills:
Excellent at public speaking, pitching, written reporting, activity planning and groups coordination.

Personal interests:
- **Music:** knowledge in the field of electronic music, with waged experiences of disc jockeying
- **Literature:** passionate reader leading amateur activity of sci-fi short-novels writing
- **Sport:** running, tennis, skiing
- **Photography:** waged experiences of photographer and contents creator for ludic events
- **Theatre:** acting experiences at regional level at the 'Delia Cajelli' social theatre in Busto Arsizio (VA), Italy

Lorenzo Gianquintieri, Ph.D.
Curriculum vitae

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Synthetic CV

From November 1st 2023:

RTDA – Junior Research Fellow and Assistant Professor (Ricercatore a tempo determinato tipo A) at the Electronics, Information and Bioengineering dpt., **Politecnico di Milano, Italy**.

The research line and teaching activity are focused on Health-Geomatics, which is the application of geomatics technologies to health and healthcare-related data, with an orientation towards data science methods (in particular Machine Learning and GeoAI models). The intended outcome is the development of analysis frameworks and processing platforms to serve as decision-making support in the management of public healthcare related resources, territorial monitoring, and prevention, specifically regarding environmental analysis and out-of-hospital emergency medicine.

Professional Experiences

- February 1st 2022 – October 31st 2023:
  Politecnico di Milano, Milano (IT) - <u>Post-doctoral researcher (Assegnista di Ricerca)</u>
- February 2nd 2018 – October 31st 2018:
  I.C.E. Suisse SA, Via Passeggiata 1, Balerna (TI), Switzerland – <u>Biomedical consultant and researcher</u>
- February 2nd 2018 – October 31st 2018:
  Fondazione Ticino Cuore, Via Vergiò 8, Breganzona (TI), Switzerland – <u>Researcher in the field of Public Access Defibrillation</u>
- April 26th 2017 –May 10th 2017:
  Istituto di Istruzione Superiore di secondo grado Gadda Rosselli, Gallarate (VA), Italy – <u>Substitute teacher for mathematics and physics, address Liceo Linguistico</u>

Studies and Education

- November 1st 2018 – March 28th 2022: **PhD** in Biomedical Engineering at Politecnico di Milano, Italy; graded Diploma cum Laude
  Thesis: 'Development of Health Geomatics Solutions for Data Science in Emergency Medical Services', supervisors Prof. EG Caiani, Prof- MA Brovelli
  May 2021: 'Ethics and technology' – IDEA League summer school
- 2015 - 2017: **Master degree** in **Biomedical Engineering** at Politecnico di Milano, Italy; graded 110/110
  Thesis: 'A Geographic Information data-driven decision-making support system for accessibility of public defibrillators in the city of Milan', supervisor Prof. EG Caiani
  10/03/2017 – 18/03/2017: Athens Program – Czech Technical University
- 2011 - 2015: **Bachelor degree** in **Biomedical Engineering** at Politecnico di Milano, Italy; graded 90/110
  Thesis: 'Studio di fattibilità per la registrazione di segnale Ballistocardiografico tramite smartphone', supervisor Prof. EG Caiani
- 2006 - 2011: **High school diploma** in **Classical Studies** at Liceo Classico Giovanni Pascoli (Gallarate, VA, Italy); graded 100/100

Informatics Knowledge

- **OS:** Windows, macOS, OSGeo, Linux
- **Programming languages:** Python, Matlab, HTML, SQL
- **Software:** QGIS, ArcGIS, Matlab, Arduino, Office package

HEALTH-GEOMATICS
*Citations in square brackets refer to items described in the scientific production section.

Health geomatics can be defined as the science of acquiring, integrating, managing, analyzing, visualizing, and disseminating geospatially referenced health information to support decision making in healthcare. It is based on the application of data science methodologies, such as machine learning, to spatially explicit models related to health and healthcare data. This track was created by Prof. Enrico Caiani (Department of Electronics, Information and Bioengineering at Politecnico di Milano) together with Prof. Maria Brovelli (Department of Civil and Environmental Engineering at Politecnico di Milano), thanks also to the collaboration with AREU (Emergency Agency in Lombardy, managing out-of-hospital medical emergencies and all related services). After some preliminary theses, I was the first person to start in 2018 a structured research on this topic at Politecnico di Milano, thanks to an interdepartmental Ph.D. scholarship. To this day (April 2024), three additional Ph.D. positions (two under the Data analytics and Decision Science PhD program at POLIMI, and one under the National PhD on Sustainable Development and Climate Change at IUSS Pavia) have been activated on this research track by Prof. Caiani, thus creating a research team on Health Geomatics I am part of as senior researcher. As a result, conducted research activity that I led has been focused in investigating several application contexts in which geo-data and open-data from different sources, related to health and healthcare, could result in enhanced information for decision making, including:

ENVIRONMENTAL EPIDEMIOLOGY
The impact of the environment on population's health is well known, but this relationship is usually studied on a micro-scale, assessing the pathophysiological mechanisms that environmental variables have on biological systems: less is known with relevance to the impact on population-scale, mainly due to the limited availability of data, and the existence of many confounding factors that hinder the identification of possible correlations. Yet, the methodologies of health-geomatics open new promising possibilities to study how environmental variables impact the health of entire populations, according to their geographic location, thus changing the perspective from the single patient towards territorial monitoring. In particular, thanks to the combination of new technologies in both data collection and data analysis [P.11], is now possible to accurately analyze the impact of air quality [C.2] on population's health, in a long-term exposure perspective as well as in acute events of pollution spikes [P.9,P.10]. A first example was implemented during the COVID-19 emergency, when I tutored a bachelor thesis aimed at studying the impact of air quality on the diffusion of the pandemic: the use of spatial clustering allowed to account for confounding factors, obtaining robust results in contrast with previous literature. This project also led to publish a scientific full paper [P.4]. Currently, this research is still in progress, as I am working to replicate the same framework to study other medical emergencies, such as cardiac arrest, myocardial infarction, and stroke, in order to develop a territory-based risk stratification (risk maps), both oriented to identify possible drivers as well as to support decision-making in preventing and intervening on these conditions.

URBAN HEATWAVES
The combination of strong urbanization of the territories with climate change is posing new threats for human health worldwide, with extreme climatic events increasing in intensity and in frequency. One of most dangerous effects is represented by urban heatwaves, which can be defined as extended periods of very intense heat over urban territories. While the effects of intense heat on the human body are well-assessed, there is a consistent lack of studies from the territorial point of view and at population-level, starting from the definition of heatwave itself. For this reason, my research group is trying to set some

baseline knowledge to frame the topic, and to start generating evidence about the impact of this condition on population's health, using retrospective data of geo-localized ambulance dispatches in the city of Milan as proxy, to be correlated using different spatial models to socio-urban features computed from different open data sources for each of the 88 basic territorial units in which the city can be subdivided, comparing number and spatial distribution of events in days during heat days and in normal days. A specific focus has been posed on cardiovascular and respiratory issues [C.3]. The aim is to provide data-driven decision support for policy makers, both for emergencies management and for prevention in terms of urban city planning.

PANDEMIC MONITORING
During the spring of 2020, the territory of Lombardy region, where the Politecnico di Milano is located, faced the first endemic outbreak of COVID-19 outside of China, resulting in an unprecedented situation of sanitary emergency. In light of our strict collaboration with AREU, we contributed to analyze data related to out-of-hospital emergency interventions, thus inferring knowledge about the spreading of the pandemic based on the ambulance dispatches and symptomatology of patients, an approach that resulted more representative compared to official diagnoses. With this methodology, and with the support of spatial modeling combined to signal processing and machine learning, it was possible to reconstruct the spreading of the disease over the territory [P.3], to implement a model for the generation of early-alerts in single municipalities [P.5], and to also develop a predictive model to forecast the demand for emergency services. Moreover, it was possible to demonstrate how data science could have provided a significant support even in the first phases of the pandemic [P.7], both in diagnosis and patient management; additionally, it has been demonstrated that the geographical component of the analysis could substantially increase the performance in all the developed models.

PUBLIC ACCESS DEFIBRILLATION
Public Access Defibrillation (PAD) consists in the deployment of Automated External Defibrillators (AED) over the territory of urban areas, to be used by bystanders on victims of out-of-hospital cardiac arrest, in order to intervene before the arrival of emergency teams and thus reducing the time of first defibrillation, which is proved to be vital in order to increase the survival probability of patients. Current guidelines about PAD suggest the installation of AED in some specific locations, but scientific literature agrees that this non-systematic approach is sub-optimal in terms of spatial coverage and, consequently, of efficiency. Starting from my master thesis, I studied how to apply spatial modeling (with innovative approaches [C.1]) to assess the efficiency of devices distribution [P.1] and to propose an optimized positioning for such devices [P.2], showing how a data-driven and centralized management could substantially increase the potential efficiency in the deployment.

ALLOCATION OF AMBULANCES FLEET
Emergency Medical Services (EMS) rely on ambulances in order to intervene on the territory in cases of medical emergencies, when activated by citizens calls. However, considering the costs of equipment and human labor, the planning of the number of these resources, and their consequent positioning on the territory, are strongly sensitive issues for EMS providers. Moreover, while in Lombardy region AREU already implemented (since 2015 in the current form) a structured workflow for data collection, this is not true for other areas, also in other regions of Italy, thus hindering further the possibility to implement data-driven policies about the sizing and positioning of ambulances fleet. For this reason, in the last year I implemented a full model based on a "digital twin", capable of simulating both the emergency calls and the intervention logistics, with statistical significance. On such basis, it is possible to assess the efficiency of the resource's distribution at the level of single stations, simultaneously identifying situations of under-sizing, over-sizing, as well as areas with significant demand currently uncovered in due time (publication in preparation). Thanks to environmental open-data, the model implemented for Lombardy region can be replicated in other areas and is currently being tested on the territories of Sardinia (island) and Calabria (southern Italy).

Participant in the 'D-DUST' project, Bando Cariplo 2020 "Data Science for Science and Society" - [LINK](#)
The 'Data-driven moDelling of particUlate with Satellite Technology aid' (D-DUST) project (2021-23), financed by Cariplo Foundation (PI, Prof. MA Brovelli), was devoted to investigate the impact of agricultural and zootechnic activities on the concentration of particulate matter in the air, exploiting satellite data for a continuous mapping. As part of the DEIB team of Prof. Caiani, my role was to carry on the final work package, oriented at modelling the relation between agricultural land (and other land-use classes) and PM concentration [C.2] with the support of Artificial Intelligence algorithm specifically developed for geospatial analysis.

Participant in the 'CORE-MD' project, Horizon 2020 Call SC1-HCO-18-2020 - [LINK](#)
The 'Coordinating Research and Evidence for Medical Devices' (CORE-MD) project (2021-2024) (PI A. Fraser, European Society of Cardiology), aims to address the challenges that the introduction of the new EU Medical Device Regulation will have on both regulatory bodies, industry, healthcare professionals, and patients. As part of the DEIB team of Prof. Caiani, my role was to start coordinating students groups in the development of a mashup platform, based on natural language processing, to retrieve information on post-market events in high-risk medical devices.

ACTIVE COLLABORATIONS
- Since 2017, collaboration with the Agenzia Regionale Emergenza Urgenza (AREU), Milan, in several research projects relevant to health geomatics.
- Since 2018, collaboration with the GeoLab (Geomatic and Earth Observation Lab) @POLIMI
- Since 2023, collaboration with ENEL-X as hosting partner for curricular internship of research group collaborator, PhD student Julia Agnieszka Nawaro
- Since 2024, collaboration with Croce Rossa within the project 'Isole Cardioprotette'
- Since 2024, collaboration with GMATICS as contractor within the URBANA project by European Space Agency
- Since 2024, collaboration with German Aerospace Center (DLR) as hosting partner for curricular internship of research group collaborator, PhD student Amruta Mahakalkar

BIBLIOMETRIC SCORES
Starting from 2019, author or co-author of **11 articles** in peer review international journals, **3 conference papers**, and **3 abstracts** presented in international conferences.

Scopus Author ID: 57209235483 (date of extraction April 7th 2024) - [LINK](#)
Number of products: 12
H-index: 4
Total citations: 71

Google Scholar (date of extraction April 7th 2024) - [LINK](#)
Number of products: 17
H-index: 4
Total citations: 88

ORCID 0000-0002-9658-5749 (date of extraction April 7th 2024) - LINK
Number of products: 15

Total impact factor referring to the year of publication: 52 (average 4.71 per item)
Total impact factor actualized to 2023 values: 56 (average 5.13 per item)

PHD THESIS
'Development of health geomatics solutions for data science in emergency medical services' - LINK
My PhD thesis was oriented to the development and implementation of health-GIS frameworks as evidence-based and data-driven support to policy makers in the field of Emergency Medical Services, identifying applications, developing relevant data processing models, and validating them with dedicated metrics. The research was articulated in a series of study-cases, relevant to two fields of application: Public Access Defibrillation (PAD), and disease surveillance for the pandemic of COVID-19, including effects of pollution on COVID-19 spread.

PAPERS IN INTERNATIONAL PEER REVIEWED JOURNALS
*Impact factor is reported for both the year of publication and, between brackets, for the most recent available value.

[P.1] Auricchio A, **Gianquintieri L**, Burkart R, Benvenuti C, Muschietti S, Peluso S, Mira A, Tiziano Moccetti T, Caputo ML. Real-life time and distance covered by lay first responders alerted by means of smartphone-application: Implications for early initiation of cardiopulmonary resuscitation and access to automatic external defibrillators. *Resuscitation* **2019**; 141:182-187. [IF= 4.215 (6.5)] DOI 10.1016/j.resuscitation.2019.05.023

[P.2] **Gianquintieri L**, Brovelli MA, Brambilla P, Pagliosa A, Villa GF, Caiani EG. Development of a novel framework to propose new strategies for Automated External Defibrillators deployment targeting residential areas: application to the city of Milan. *ISPRS Int. Journal of Geo information - Special issue "GIS and Health"* **2020**; 9: 491. [IF=2.239 (3.4)] DOI 10.3390/ijgi9080491 Scopus: 2-s2.0-85090585829

[P.3] **Gianquintieri L**, Brovelli MA, Pagliosa A, Dassi G, Brambilla PM, Bonora R, Sechi GM, Caiani EG. Mapping spatiotemporal diffusion of COVID-19 in Lombardy (Italy) on the base of Emergency Medical Services activities. *ISPRS Int. Journal of Geo information* **2020**; 9:639 [IF=3.099 (3.4)] DOI 10.3390/ijgi9110639)

[P.4] **Gianquintieri L**, Brovelli MA, Pagliosa A, Bonora R, Sechi GM, Caiani EG. Geospatial correlation analysis between air pollution indicators and estimated speed of COVID-19 diffusion in the Lombardy region (Italy). *Int. J. Environ. Res. Public Health* - Special Issue: Research about Risk Perception in the Environmental Health Domain **2021**; 18(22):12154. [IF=3.39 (3.39)] DOI 10.3390/ijerph182212154

[P.5] **Gianquintieri L**, Brovelli MA, Pagliosa A, Dassi G, Brambilla PM, Bonora R, Sechi GM, Caiani EG. Generating High-Granularity Covid-19 Territorial Early Alerts Using Emergency Medical Services and Machine Learning. *International Journal of Environmental Research and Public Health - Special Issue: Disasters Preparedness and Emergency Response: Prevention, Surveillance and Mitigation Planning* **2022**; 19: 9012. [IF=3.39 (3.39)] DOI 10.3390/ijerph19159012

[P.6] Fraser AG, Nelissen RGHH, Kjærsgaard-Andersen P, Szymański P, Melvin T, Piscoi P; CORE-MD Investigators (see Appendix including **Gianquintieri L**). Improved clinical investigation and evaluation of high-risk medical devices: the rationale and objectives of CORE-MD (Coordinating Research and Evidence for Medical Devices). *Eur Heart J Qual Care Clin Outcomes* **2022**; 8(3):249-258. [IF=4.37 (5.2)] DOI 10.1093/ehjqcco/qcab059

[P.7] Spina S, **Gianquintieri L**, Marrazzo F, Migliari M, Sechi GM, Migliori M, Pagliosa A, Bonora R,

Langer T, Caiani EG, Fumagalli R. Detection of patients with COVID-19 by the emergency medical services in Lombardy through an operator-based interview and machine learning models. *Emergency Medicine Journal* **2023**; 40(12):810-820 [IF=3.1 (3.1)] DOI 10.1136/emermed-2022-212853

[P.8] Nawaro JA, **Gianquintieri L**, Pagliosa A, Sechi G, Caiani EG. Heatwaves and their impact on cardiovascular health mortality and morbidity: a systematic review. *Public health Review* **2023**; 44:1606266 [IF=5.5 (5.5)] DOI 10.3389/phrs.2023.1606266

[P.9] **Gianquintieri L**, Oxoli D, Caiani EG, Brovelli MA. Implementation of a GEOAI model to assess the impact of agricultural land on the spatial distribution of PM2.5 concentration. *Chemosphere* **2024**; 352:141438 [IF=8.8 (8.8)] DOI 10.1016/j.chemosphere.2024.141438

[P.10] Mahakalkar AU, **Gianquintieri L**, Amici L, Brovelli MA, Caiani EG. Geospatial analysis of short-term exposure to air pollution and risk of cardiovascular diseases and mortality–A systematic review. *Chemosphere* **2024**; 352:141495 [IF=8.8 (8.8)] DOI 10.1016/j.chemosphere.2024.141495

[P.11] Gianquintieri L, Oxoli D, Caiani EG, Brovelli MA. State-of-art in modelling particulate matter (PM) concentration: a scoping review of aims and methods. *Env Dev & Sust* **2024** [IF=4.9 (4.9)]; Published Online First: 2 April 2024 DOI 10.1007/s10668-024-04781-5

CONFERENCE PROCEEDINGS PUBLISHED IN OPEN ACCESS JOURNALS

[C.1] **Gianquintieri L**, Caiani EG, Brambilla P, Pagliosa A, Villa GF, Brovelli MA. Open Data in Health-Geomatics: Mapping and Evaluating Publicly Accessible Defibrillators. *International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences - ISPRS Archives* **2019**; 42: 63–70. https://doi.org/10.5194/isprs-archives-XLII-4-W14-63-2019

[C.2] **Gianquintieri L**, Oxoli D, Caiani EG, Brovelli MA. Land use influence on ambient PM2.5 and ammonia concentrations: Correlation analyses in the Lombardy region, Italy. AGILE GIScience Ser., **2023**;4:26. https://doi.org/10.5194/agile-giss-4-26-2023

[C.3] Nawaro J, **Gianquintieri L**, Pagliosa A, Silvaroli A, Sechi GM, Caiani EG. Heat Waves and Cardiovascular Events in Milan, Italy: A Geospatial Case-Crossover Approach Using Data from Emergency Medical Services. *Med. Sci. Forum* **2023**;19:5. https://doi.org/10.3390/msf2023019005DOI 10.3390/msf2023019005

OTHER CONFERENCE PROCEEDINGS

[c.1] **Gianquintieri L**, Brovelli MA, Brambilla P, Pagliosa A, Villa GF, Caiani EG. Health-Geomatics application for evaluation and improvement of Public Access Defibrillation in the city of Milan. Proceedings National Conference of Biomedical Engineering (GNB) **2018**: 1-4, June 25-27 2018, Milan, Italy (ISBN, 9788855534219)

CONFERENCE ABSTRACTS IN JOURNALS WITH IMPACT FACTOR

[A.1] **Gianquintieri L**, Brambilla P, Pagliosa A, Villa GF, Caiani EG. A health geomatics framework for the assessment of the spatial distribution of out-of-hospital cardiac arrests and effective use of automated external defibrillators: the case of the city of Milan. *European Heart Journal* **2018**;39(suppl_1) [IF= 24.89 (39.3)]. https://doi.org/10.1093/eurheartj/ehy565.P2548

[A.2] **Gianquintieri L**, Malavolti M, Ferrante S, Caiani EG. Development and validation of an automated tool to scan scientific literature for the use of specific technologies in the field of cardiology. *European Heart Journal* **2020**;41(Suppl 2, November 2020): ehaa946.3555. [IF= 29.98 (39.3)] https://doi.org/10.1093/ehjci/ehaa946.3555

[A.3] Nawaro J, **Gianquintieri L**, Pagliosa A, Silvaroli A, Sechi GM, Caiani EG. Heatwaves and cardiovascular emergencies in Milan, Italy: pre-COVID-19, COVID-19 and post-COVID-19 characteristics and associated risk during heat days. *European Heart Journal* **2023**;44(Suppl 2, November 2023) [IF= 29.98 (39.3)] https://doi.org/10.1093/eurheartj/ehad655.3009

Awards

1) **Winner** – Moderated Poster Award in Big Data, <u>European Society of Cardiology Congress, **2017**</u>, Barcelona (Spain), 26th-30th August 2017.

   Gianquintieri L, Brambilla P, Pagliosa A, Villa GF, Caiani EG. A health geomatics framework for the assessment of the spatial distribution of out-of-hospital cardiac arrests and effective use of automated external defibrillators: the case of the city of Milan. Eur Heart J 2018;39(suppl_1)

2) **Winner -** Scientific award for best contribution in track 'E-health and bioinformatics' (€ 1000)**.** <u>6th National Congress of Bioengineering - GNB **2018**</u>, Milan (Italy), 25th-27th June 2018. **Gianquintieri L**, Brovelli MA, Brambilla P, Pagliosa A, Villa GF, Caiani EG. Health-Geomatics application for evaluation and improvement of Public Access Defibrillation in the city of Milan.

3) **Finalist -** Technology & Innovation in E-Cardiology Award (€ 250). <u>European Society of Cardiology Digital Summit **2019**</u>, Tallin (Estonia), 5th-6th October 2019.

   GIS-based platform for analysis, evaluation and optimization of Public Access Defibrillation programs

4) **Winner -** Valutare Premia **2022**: best PhD thesis focused on research about the analysis and assessment of public policies on a regional scale (€ 2500). <u>Comitato Paritetico di Controllo e Valutazione, Consiglio Regionale Regione Lombardia</u>.

   Development of health geomatics solutions for data science in emergency medical services.

Reviewer Activity

TOTAL REVIEWS: 37
- ISPRS international journal of geo-information – 3
- International journal of environmental research and public health – 16
- Healthcare – 10
- Informatics – 1
- Spatial information research – 1
- iScience – 1
- Journal of Medical Systems – 1
- Scientific Reports – 1
- Npj digital medicine – 1
- Emergency Medicine Journal - 1
- Chemosphere - 1

2022 – Entitled with 'Recognition Awards for Manuscript Reviews Winner of the IJERPH 2022 Outstanding Reviewer Awards'

Teaching activity

AT MASTER DEGREE LEVEL

In these years, my teaching activity at Politecnico di Milano has been related to eHealth and health geomatics topics, first as Tutor and now having the responsibility of a new class.

- **Appointed Professor** of the following course: <u>HUMAN HEALTH AND ENVIRONMENT DATA SCIENCE LABORATORY MODULE 1</u> (3CFU) , A.A. 2023/24.
  Despite the relationship between environmental factors and human health has been known for years, there is now more attention from both the general public and different stakeholders (industry, healthcare professionals, policy makers) in addressing this matter. This fact generates the need to provide multidisciplinary competences, related to both environmental and biomedical engineering, to collect, organize, analyze, and visualize the multisource data available to generate quantitative data and actionable information that could serve as basis for decision makers. This Lab course aims are intended to provide the student with competences about how the environment may affect human well-being and health, and to provide the skills needed to access and process available geo-localized multi-source environmental and health data to support public health management decision-making. Students also learn the principles and concepts of air quality and dispersion and will be able to implement and perform air dispersion modelling, presenting appropriately the air pollution results and understanding their implications in terms of exposure and potential health effects.

- **Appointed Tutor** for laboratory project in course '<u>E-health methods and applications' – Master degree course in Biomedical Engineering</u> at Politecnico di Milano, Italy (10 CFU) A.A.2019/20, 20/21-21/22. For three editions, I was co-responsible, together with another tutor, of the organization of the laboratory project and related classroom activity based on web scraping and text analytics: students were divided in groups and evaluated through reporting and presentations, both at mid-term and at the end of the project. Topics varied every year: for the first year (A.A 2019-20), the project goal was to systematically classify and analyze all health-related smartphone apps present of the different app stores; for the second year (A.A 2020-21), the focus was on the classification of scientific literature in the different medical domains; for the third year (A.A 2021-22) the project was oriented to the analysis of adverse events related to clinical devices, setting the ground base for the participation in the CORE-MD project.

- **Tutoring for** <u>bachelor degree thesis in Biomedical Engineering</u> at Politecnico di Milano, Italy (2020) – title: 'Analysis of correlation between pollutants and COVID-19 diffusion on the territory of Lombardy, Italy'**.** This thesis was focused on the identification of possible correlations between the levels of pollution concentration (including 9 different pollutants) and the velocity of diffusion of the COVID-19 pandemic, as estimated by the intervention requests to the emergency medical systems. The innovation we introduced in this highly studied field (on top of the proxy data source) was to include a pre-processing step of spatial clustering, thus only comparing areas with similar characteristics from the anthropic perspective and avoiding the impact of many confounding factors. After double checking all the analysis, this thesis was also summarized in a scientific paper that we were able to publish on an international peer reviewed journal [P.4].

AT PHD LEVEL

- **Co-organizer and professor in the class '**<u>Human and Ecosystem Health Geoinformatics'</u> (5 CFU), A.A. 2022/23, National PhD program in Sustainable Development and Climate Change (SDC) – IUSS Pavia. In the context of this national PhD, I was proposing and co-organizing this course, attended by students with different backgrounds. My lectures (6h) focused on the use of Geographic Information Systems, introduction the theoretical framework of mapping and coordinate reference systems, and on the basics of data pre-processing to implement workflows of data-science, specifically for geographical data.

Seminsars

AT MASTER DEGREE LEVEL

- <u>Geographic Information Systems class</u> (Prof. Maria Antonia Brovelli), Politecnico di Milano, A.A. 2019-20: **Invited lecturer** on "Geographic Information Systems applied to health and healthcare related data: Health-Geomatics", October 6th 2020.
- <u>E-Health Methods and Applications</u> class (Prof. Enrico Gianluca Caiani), Politecnico di Milano, A.A. 2021-22: **Invited lecturer** on "Health Geomatics", November 17th 2021
- <u>GEOlab Talks – Geographic Information Systems course</u> (Prof. Maria Antonia Brovelli) at Politecnico di Milano, A.A. 2022-23. **Invited lecturer** on "Satellites and models for farming emissions analysis – the DDUST project", June 1st 2023

AT PHD LEVEL

- <u>PhD Program in Health Data Science</u>, Faculty of Medicine of Porto University (FMUP), A.A. 2020-21. **Invited lecturer** on "Health geomatics: data science applied to emergency services", March 16th 2021

AT SCIENTIFIC CONGRESSES

- <u>Digital Medicine Congress</u> – Athens, Greece, May 2023. **Distinguished lecturer** at "Geolocalization of patients and medical resources is a prerequisite for a successful health policy implementation", May 20th 2023

AT PUBLIC EVENTS

- <u>Milano Digital Week 2021</u>: Data Science per i Servizi Medici di Emergenza a Milano e in Lombardia. **Invited speaker** on: "L'emergenza pandemica: ruolo e potenzialità dei dati dei servizi medici di emergenza nel monitoraggio dell'evoluzione pandemica", March 20th 2021

Scientific Conferences

- <u>6th National Congress of Bioengineering - GNB 2018</u>, Milan (Italy), 25th-27th June 2018

  Poster presentation about 'Health-Geomatics application for evaluation and improvement of Public Access Defibrillation in the city of Milan'
- <u>Supporting Health by Technology 2019</u> – Groningen (Netherlands), 15th-18th May 2019

  Pitch presentation about 'Health-Geomatics application for evaluation and improvement of Public Access Defibrillation in the city of Milan'
- <u>FOSS4G 2019</u> – Bucharest (Romania), 25th-31st August 2019

  Short paper and pitch presentation about 'Open Data in Health-Geomatics: Mapping and Evaluating Publicly Accessible Defibrillators'
- <u>European Society of Cardiology - Digital Summit 2019</u> – Tallin (Estonia), 4th-7th October 2019

Pitch presentation about 'GIS-based platform for analysis, evaluation and optimization of Public Access Defibrillation programs'

- <u>AGILE 2023</u> – Delft (Netherlands), 14th-16th June 2023

  Short paper and pitch presentation about 'Land use influence on ambient PM2.5 and ammonia concentrations: Correlation analyses in the Lombardy region, Italy'