
PERSONAL INFORMATION

Giovanni Calabrò

Fixed-term Researcher (RTD-A) in Transport – SSD CEAR-03/B

Department of Electrical, Electronic and Computer Engineering – University of Catania

Institutional email: giovanni.calabro@unict.it

Nationality: Italian

WORK EXPERIENCE

01/07/2023 – Present - *Catania, Italy*

Fixed-term University Researcher (RTD-A) – University of Catania, Department of Electrical, Electronic and Computer Engineering

- Research activity: forecasting traffic flows on a road network without fixed sensors using Machine Learning models and mixed data sources; planning innovative multimodal urban mobility services. SSD CEAR-03/B – Transport.
- Teaching activity: "Transport Planning" module on the Bachelor's degree course in Planning and Environmental Sustainability of Land and Landscape (L-21); "Fundamentals of Sustainable Transport Engineering" module on the Bachelor's degree course in Civil, Environmental and Management Engineering (L-7); "Sustainable Mobility" module on the Master's degree course in Engineering for the Environment and the Territory (LM-35).
- Third-party agreements: agreement with Smartme.io S.R.L. for the coordination and technical-scientific support of a feasibility study on an integrated public transport model based on fixed and on-demand lines for the city of Caltanissetta (2024).

01/05/2022 – 30/06/2023 - *Catania, Italy*

Technical Managing Officer – Mobility Expert – Municipality of Catania, Department of EU Policies, Structural Funds, Energy Policies and Sport

- Design activities and support to the Sole Contracting Officer (RUP) and Works Director (DL) under the National Operational Programme for Metropolitan Cities (PON METRO 2014-2020), covering the priorities "sustainability of urban services and mobility", "infrastructure for social inclusion" and "green, digital and resilient recovery".

21/01/2022 – 20/09/2022 - *Catania, Italy*

Technical-Scientific Consultant – University of Catania, Department of Civil Engineering and Architecture

- Technical assistance, consultancy and research support on topics related to maritime transport and life cycle assessment (LCA), within the THALASSA project – Technology And materials for safe Low consumption And low life cycle cost vessels And crafts.

01/01/2020 – 20/01/2022 - *Catania, Italy*

Research Activity – University of Catania, Department of Civil Engineering and Architecture

- Participation in the research activities of the WEAKI TRANSIT project – WEAK-demand areas Innovative TRANsport Shared services for Italian Towns (PRIN – 2017 call).
- Use of advanced simulation tools to support the design of on-demand shared transport services for weak-demand areas.

31/10/2018 – 29/03/2019 - *Catania, Italy*

Scientific Collaboration – University of Catania, Department of Civil Engineering and Architecture

- Technical-scientific support for the drafting of the Urban Traffic General Plan (PGTU) of the Municipality of Acireale (Catania); analysis of design solutions promoting pedestrian mobility for the redevelopment of school access points.

26/03/2018 – 25/06/2018 - *Catania, Italy*

Internship – Strafer Ingegneria, Studio Associato

- Road design (works on provincial road SP 46 "Ispica-Pozzallo") using SierraSoft ProSt software.

- Support in the design of railway noise barriers (Milan-Naples line): earthworks analysis and quantity take-off.
- Quality control and updating of the sampling and concrete testing register for reinforced concrete works on the "Nesima-Monte Po" metro section.

EDUCATION AND TRAINING

31/10/2018 – 20/01/2022 - *Catania, Italy*

PhD in Assessment and Mitigation of Urban and Territorial Risks (XXXIV cycle) – University of Catania

Fields of study:

- Agent-based modelling and simulation
- Optimisation algorithms for transport networks
- Design of on-demand shared transport services
- Analysis of public transport accessibility and sustainable mobility
- Analytical "Continuous Approximation" methods for transport network design

Field of study: Engineering, manufacturing and construction | Final mark: with distinction | EQF level: 8

Thesis: "Adaptive Transit Design and Operation via Agent-Based Simulations and Analytical Models"

TEACHING ACTIVITY

Since 2023 – University of Catania, Department of Electrical, Electronic and Computer Engineering

- "Transport Planning" – Bachelor's degree course in Planning and Environmental Sustainability of Land and Landscape (L-21)
- "Fundamentals of Sustainable Transport Engineering" – Bachelor's degree course in Civil, Environmental and Management Engineering (L-7)
- "Sustainable Mobility" – Master's degree course in Engineering for the Environment and the Territory (LM-35)

Participation in PhD teaching boards:

- 10-hour teaching module within the "REUNICE Certificate Program on Sustainability Management" (hybrid mode), academic year 2024-2025, for PhD students of the University of Catania and of the partner universities of the Eunice transnational network, 16-20/09/2024.

PARTICIPATION IN RESEARCH GROUPS AND PROJECTS

WEAKI TRANSIT – WEAK-demand areas Innovative TRANsport Shared services for Italian Towns

Participation in the activities of the research group of the Department of Civil Engineering and Architecture (DICAR), University of Catania. PRIN 2017 project funded by the Italian Ministry of University and Research (MIUR), scientific coordinator Prof. Matteo Ignaccolo. CUP E44I17000050001, total budget €955,140.00.

27/01/2020 – 27/01/2024

ADDRESS – Advance Design for Demand Responsive transport and Services of general interest in inner areas for the Sustainable territorial re-equilibrium

Participation in the research group coordinated by Prof. Giuseppe Inturri, Department of Electrical, Electronic and Computer Engineering (DIEEI), University of Catania. Interdepartmental research project, PIA.CE.RI. 2020-2022, Line 2, UPB 59722022271.

01/09/2020 – 01/09/2022

THALASSA – TechNology And materials for safe Low consumption And low life cycle cost veSSels And crafts

Participation in the interdisciplinary research group coordinated by Prof. Matteo Ignaccolo, University of Catania. Technical assistance, consultancy and research support on maritime transport and life cycle assessment (LCA): data acquisition and analysis, application of mathematical models to real case studies, drafting of reports and scientific documents. Project code ARS01_00293, CUP B46CI8000720005, total budget €9,663,046.00.

21/01/2022 – 21/01/2022

National Centre for HPC, Big Data and Quantum Computing – Spoke 9 "Digital Society & Smart Cities"

Participation in the interdisciplinary research group coordinated by Prof. Salvatore Cavalieri, Department of Electrical, Electronic and Computer Engineering (DIEEI), University of Catania. National Centre funded under the Italian National Recovery and Resilience Plan (PNRR) – Mission 4 "Education and Research", Component 2, Investment 1.4, with EU funding (NextGenerationEU). Code CN00000013, CUP E63C22001000006.

01/07/2023 – ongoing

SMART3R-FLITS – SMART Transport for Travellers and Freight Logistics Integration Towards Sustainability

Participation in the DIEEI research group, University of Catania. PRIN 2022 project funded by MIUR, scientific coordinator Prof. Giuseppe Inturri. CUP E53D23010230006, Cineca code 2022J38SR9, total budget €251,993.00.

01/10/2023 – ongoing

DATASET – Data-Driven Analysis for Sustainable Energy and Transport Systems

Participation in the interdepartmental research group coordinated by Prof. Alessandro Pluchino, Department of Physics and Astronomy (DFA), University of Catania. Project funded under the University Research Incentive Plan (Piaceri) 2024/2026.

01/01/2025 – ongoing

RESEARCH APPOINTMENTS AT FOREIGN UNIVERSITIES (VISITING RESEARCHER)

Télécom SudParis – Institut Mines-Télécom (Evry Courcouronnes, France)

Visiting Researcher, research activity funded by a French government scholarship (amount €5,112.00).

18/02/2020 – 18/05/2020

Télécom SudParis – Institut Polytechnique de Paris (Palaiseau, France)

Visiting Researcher, under the departmental call for the University's International Staff Mobility Programme.

07/03/2025 – 07/04/2025

Universidad de Alcalá (Alcalá de Henares, Spain)

Visiting Researcher, research activity funded by the "Giner de los Ríos" programme.

17/10/2025 – 31/10/2025

ORGANISATION OF AND PARTICIPATION IN SCIENTIFIC CONFERENCES

Speaker at international conferences:

- **AIIT 2nd International Congress TIS Roma 2019** (Rome (IT), 23-24/09/2019) – "Bridging the gap between weak-demand areas and public transport using an ant-colony simulation-based optimization"
- **TRB 99th Annual Meeting** (Washington, D.C. (USA), 12-16/01/2020) – "On-Demand Flexible Transit in Fast Growing Cities: The Experience of the MVMANT Service in Dubai"
- **Forum on Integrated and Sustainable Transportation Systems (Forum-ISTS2020)** (Delft (NL), online, 03-05/11/2020) – "Comparing the performance of demand responsive and schedule-based feeder services of mass rapid transit: an agent-based simulation approach"
- **TRB 100th Annual Meeting** (Washington, D.C. (USA), online, 05-29/01/2021) – "Integrating Fixed and Demand-responsive Transportation for Flexible Transit Network Design"
- **24th Euro Working Group on Transportation Meeting (EWGT2021)** (Aveiro (PT), online, 08-10/09/2021) – "Modelling the dynamics of on-demand urban deliveries via an agent-based model"
- **AIIT 3rd International Congress TIS Roma 2022** (Rome (IT), 15-16/09/2022) – "A simulation-optimization approach to solve the first and last mile of mass rapid transit via feeder services"
- **International Webinar AIMAS 2024** (Petràlia Soprana (IT), 18-20/04/2024) – "Exploring the integration of demand responsive transport and last-mile delivery: a new agent-based modelling approach"
- **26th Euro Working Group on Transportation Meeting (EWGT2024)** (Lund (SE), 04-06/09/2024) – "Integrating Passengers and Freight using Demand-Responsive Transport: an Agent-Based Model" — Session Chair of Session B1 "Accessibility and Inclusivity in Transport"
- **AIIT 4th International Conference TIS Roma 2024** (Rome (IT), 19-20/09/2024) – "Measuring the readiness to become a '30 km/h city'" — Session Chair of Session 13 "Transport Policy"
- **AIMAS 2025** (Petràlia Soprana (IT), 10-12/04/2025) – "An agent-based model for passenger and freight integration via demand-responsive transport"
- **31st IJCIEOM – International Joint Conference on Industrial Engineering and Operations Management** (Bari (IT), 23-25/06/2025) – "Enhancing Demand-Responsive Transport: An Agent-Based Model for Passenger and Freight Integration (Best Paper Award)"
- **27th Euro Working Group on Transportation Meeting (EWGT2025)** (Edinburgh (UK), 01-03/09/2025) – "Integrating Passenger and Freight Transport in Demand-Responsive Systems: a novel Agent-Based Modelling Approach"

- **20th Conference on Sustainable Development of Energy, Water and Environment Systems (SDEWES)** (*Dubrovnik (HR), 06-10/10/2025*) – "Exploring the Role of Electric Vehicles and Vehicle-to-Grid Technology in Urban Smart Grids: a new Agent-Based Model"
- **ANT 2026 – The 17th International Conference on Ambient Systems, Networks and Technologies** (*Istanbul (TR), 14-16/04/2026*) – "Quality-Demand Feedback in Hybrid Demand-Responsive Transit: Insights from a Parametric Agent-Based Model"
- **World Conference on Transport Research" (WCTR 2026).** (*Toulouse (FR), 6-10/07/2026*) – "From Small to Large Cities: A Parametric Analysis of Demand Responsive Transport Performance using Agent-Based Modelling"

Organisational activity:

- AIIT 4th International Conference TIS Roma 2024 (Rome, 19-20/09/2024) – member of the Scientific Committee and Reviewer Board; Session Chair of Session 13 "Transport Policy".
- 31st IJCIEOM (Bari, 23-25/06/2025) – organiser and Session Chair of the Special Session SPS13 "Integrating Passenger and Freight Transport for Sustainable Last-Mile Deliveries".

EDITORIAL BOARD MEMBERSHIP AND MANAGEMENT

- Review Editor for the journal "Frontiers in Energy Efficiency" (ISSN 2813-6799), "Energy Efficiency Policy" section, since 05/10/2023.
- Member of the Editorial Board of the "Open Transportation Journal" (ISSN 1874-4478), since 02/01/2024.
- Guest Editor of the special issue "Sustainable Transportation Engineering and Mobility Safety Management" of the journal "Sustainability" (ISSN 2071-1050), since 14/06/2024.

AWARDS AND HONOURS

- "Cattedra Abertis" Award 2022 – Honourable Mention for the PhD thesis "Adaptive transit design and operation via agent-based simulations and analytical models" (award ceremony held in Padua on 19/10/2023).
- Best Paper Award for the paper "Enhancing Demand-Responsive Transport: An Agent-Based Model for Passenger and Freight Integration", presented at the 31st IJCIEOM (Bari, 23-25/06/2025).

NATIONAL SCIENTIFIC QUALIFICATION (ABILITAZIONE SCIENTIFICA NAZIONALE)

- National Scientific Qualification for the role of Associate Professor, competition sector 08/A3 – Transport Infrastructure and Systems, Land Appraisal and Valuation (valid from 12/06/2026 to 12/06/2038).

PROFESSIONAL LICENCE

- Registered with the Register of Engineers (Albo degli Ingegneri) of the Province of Catania, Section A, reg. no. A7667, since 2019.

JOURNAL ARTICLES

- Ourahou, M., Araldo, A., Zigrand, L., **Calabrò, G.**, & Viana, A. C. (2026). Reliable data-driven estimation of accessibility in demand-responsive transport. *Journal of Transport Geography*, 137, 104820.
- **Calabrò, G.**, Fichera, A., Inturri, G., Pluchino, A., & Volpe, R. (2026). Exploring the role of electric vehicles and vehicle-to-grid technology in urban distributed energy systems: a multi-layer agent-based model. *Energy Conversion and Management*: X, 102168.
- de Souza Oliveira, T., Pagano, D., Cavalieri, S., Torrisi, V., & **Calabrò, G.** (2026). Scalable Traffic Flow Forecasting Using Floating Car Data, Clustering, and Deep Learning Models. *IEEE Access*.
- Torrisi, V., **Calabrò, G.**, Oliveira, T.D.S., Cavalieri, S., & Ignaccolo, M. (2026). Exploring the reliability of Floating Car Data (FCD) through penetration rate prediction in urban contexts. *Research in Transportation Business and Management*, 64, 101565.
- **Calabrò, G.**, Le Pira, M., & Inturri, G. (2025). Where and when does demand-responsive transport work best? A parametric analysis using agent-based modelling. *Euro Journal on Transportation and Logistics*, 15, 100173.
- **Calabrò, G.** (2025). A New Agent-Based Model to Simulate Demand-Responsive Transit in Small-Sized Cities. *Sustainability*, 17(12), 5279.

- **Calabrò, G., Le Pira, M., Giuffrida, N., Inturri, G., & Ignaccolo, M. (2023).** A spatial agent-based model of e-commerce last-mile logistics towards a delivery-oriented development. *Transportation Research Interdisciplinary Perspectives*, 21, 100895.
- **Calabrò, G., Araldo, A., Oh, S., Inturri, G., & Ben-Akiva, M. (2023).** Adaptive transit design: Optimizing fixed and demand responsive multi-modal transportation via continuous approximation. *Transportation Research Part A: Policy and Practice*, 171, 103643.
- Le Pira, M., Fazio, M., Giuffrida, N., Inturri, G., Ignaccolo, M., **Calabrò, G.**, & others. (2023). UaaS App – University as a Service App: exploring the acceptability of a MaaS-like concept for a University community. *European Transport / Trasporti Europei*, 90, 1-10.
- **Calabrò, G., Le Pira, M., Giuffrida, N., Ignaccolo, M., & Correia, G.H.d.A. (2022).** Fixed-Route vs. Demand-Responsive Transport Feeder Services: An Exploratory Study Using an Agent-Based Model. *Journal of Advanced Transportation*, 2022, 8382754.
- **Calabrò, G., Torrisi, V., Inturri, G., & Ignaccolo, M. (2020).** Improving inbound logistic planning for large-scale real-world routing problems: a novel ant-colony simulation-based optimization. *European Transport Research Review*, 12(1), 21.
- Giuffrida, N., Le Pira, M., Inturri, G., D'Angelo, R., **Calabrò, G.**, Pluchino, A., & others. (2020). On-demand flexible transit in fast-growing cities: The case of Dubai. *Sustainability*, 12(11), 4455.
- Ignaccolo, M., Inturri, G., Giuffrida, N., Torrisi, V., & **Calabrò, G. (2020).** A step towards walkable environments: Spatial analysis of pedestrian compatibility in an urban context. *European Transport / Trasporti Europei*, 76.

CONFERENCE PAPERS

- **Calabrò, G., & Inturri, G. (2026).** Quality-Demand Feedback in Hybrid Demand-Responsive Transit: Insights from a Parametric Agent-Based Model. *Procedia Computer Science*, 280, 971-976.
- **Calabrò, G., Inturri, G., & Le Pira, M. (2026).** Integrating Passenger and Freight Transport in Demand-Responsive Systems: A Novel Agent-Based Modelling Approach. *Transportation Research Procedia*, 95, 752-759.
- Pagano, D., Oliveira, T. D. S., Cavalieri, S., **Calabrò, G.**, & Torrisi, V. (2026). Leveraging Floating Car Data (FCD) for Traffic Forecasting in Sensorless Roads. *Transportation Research Procedia*, 95, 688-695.
- **Calabrò, G., & Inturri, G. (2025).** Enhancing Demand-Responsive Transport: An Agent-Based Model for Passenger and Freight Integration. In *International Joint Conference on Industrial Engineering and Operations Management* (pp. 503-516). Cham: Springer Nature Switzerland.
- **Calabrò, G., Le Pira, M., Inturri, G., & Ignaccolo, M. (2025).** Integrating passengers and freight using demand-responsive transport: an agent-based model. *Transportation Research Procedia*, 86, 932-939.
- **Calabrò, G., Le Pira, M., Inturri, G., & Ignaccolo, M. (2025).** Performance of a Bus Rapid Transit line with a single dedicated lane system: the case of Catania. *Transportation Research Procedia*, 86, 940-947.
- **Calabrò, G., Le Pira, M., Inturri, G., Cavalieri, S., & Galofaro, C. (2025).** Measuring the readiness to become a "30 km/h city". *Transportation Research Procedia*, 90, 694-701.
- Pagano, D., de Souza Oliveira, T., Cavalieri, S., **Calabrò, G.**, & Torrisi, V. (2025). Machine learning based modelling for scaling urban road floating car data to enable enhanced traffic forecasting. *Proceedings European Council for Modelling and Simulation (ECMS)*, 2025-June, 382-389.
- De Souza Oliveira, T., Di Grande, S., Berlotti, M., **Calabrò, G.**, & Inturri, G. (2024). Enhancing Urban Traffic Management Through Machine Learning Prediction Models for Sensor-Less Roads. *Advances in Transdisciplinary Engineering*, 63, 102-111.
- Oliveira, T.S., Pagano, D., Cavalieri, S., Torrisi, V., & **Calabrò, G. (2025).** Scalable Traffic Flow Estimation on Sensorless Roads Using LSTM and Floating Car Data. In: *Proceedings of the 14th International Conference on Data Science, Technology and Applications (DATA 2025)*, pp. 223-233.
- **Calabrò, G., Le Pira, M., Inturri, G., Ignaccolo, M., & Pluchino, A. (2023).** A simulation-optimization approach to solve the first and last mile of mass rapid transit via feeder services. *Transportation Research Procedia*, 69, 767-774.
- **Calabrò, G., Le Pira, M., Giuffrida, N., Ignaccolo, M., & de Correia, G.H.A. (2023).** Designing demand responsive transport services in small-sized cities using an agent-based model. *Transportation Research Procedia*, 69, 759-766.

- **Calabrò, G., Pira, M.L., Giuffrida, N., Inturri, G., & Ignaccolo, M. (2022).** Modelling the dynamics of fragmented vs. consolidated last-mile e-commerce deliveries via an agent-based model. *Transportation Research Procedia*, 62, 155-162.
- **Calabro, G., Correia, G., Giuffrida, N., Inturri, G., & Pira, M.L. (2020).** Comparing the performance of demand responsive and schedule-based feeder services of mass rapid transit: An agent-based simulation approach. *2020 Forum on Integrated and Sustainable Transportation Systems (FISTS)*, 280-285.
- **Calabrò, G., Inturri, G., Pira, M.L., Pluchino, A., & Ignaccolo, M. (2020).** Bridging the gap between weak-demand areas and public transport using an ant-colony simulation-based optimization. *Transportation Research Procedia*, 45, 234-241.
- Ignaccolo, M., Inturri, G., **Calabrò, G.**, Giuffrida, N., & Le Pira, M. (2019). Auditing streets' pedestrian compatibility: A study of school sites' requalification. *Pedestrians, Urban Spaces and Health – Proceedings of the 24th International Conference on Living and Walking in Cities (LWC)*, 30-34.
- Giuffrida, N., Ignaccolo, M., Inturri, G., Rofè, Y., & **Calabrò, G. (2017).** Investigating the Correlation between Transportation Social Need and Accessibility: The Case of Catania. *Transportation Research Procedia*, 27, 816-823.

PERSONAL SKILLS AND COMPETENCES

Mother tongue: Italian

Language	Listening	Reading	Spoken production	Spoken interaction	Writing
English	C1	C2	C1	C1	C1
Spanish	B2	B2	A2	B1	A2
French	B1	B2	A2	A2	A2

Technical skills and competences

- Microsoft Office package (Word, Excel, PowerPoint)
- Programming languages: Python, Matlab, VBA, LaTeX, Java
- Agent-based modelling: NetLogo, GAMA
- AutoDesk environment: AutoCAD, Revit, Civil3D
- Traffic microsimulation: PTV VISSIM

Driving licence

Category B

The undersigned is aware that, pursuant to Article 26 of Law 15/68, false declarations, falsification of documents and the use of false documents are punishable under the criminal code and special laws; accordingly, all documentation substantiating the above is held. Furthermore, the undersigned authorises the processing of personal data, in accordance with Law 675/96 of 31 December 1996.

Catania, 01/09/2026

Signature

