



## Nicola Sacco

Full professor

✉ nicola.sacco@unige.it

☎ +39 010 335 2532

### *Education and training*

2004

#### **Ph.D. in Automation and Computer Science in Transportation**

Performance optimisation of urban traffic networks via hybrid Petri nets  
Polytechnic of Turin - Turin - IT

2000

#### **Degree of Electronic Engineering**

Modellazione e regolazione del traffico urbano mediante reti di Petri ibride  
Polytechnic of Turin - Turin - IT

### *Academic experience*

2019 - ONGOING

#### **Full Professor of Transportation Engineering**

University of Genoa - Genoa - IT  
Chair of the M.Sc. in Safety Engineering for Transport Logistics and Production

2015 - 2018

#### **Associate Professor of Transportation Engineering**

University of Genoa - Genoa - IT  
Chair of the M.Sc. in Safety Engineering for Transport Logistics and Production

2011 - 2015

#### **Assistant Professor of Transportation Engineering**

University of Genoa - Genoa - IT

2006 - 2011

#### **Post-doctoral fellow in Transportation Engineering**

University of Genoa - Genoa - IT

2004 - 2006

#### **Post-doctoral fellow in Automatics**

Polytechnic of Turin - Turin - IT

## *Language skills*

### **English**

Independent

## *Teaching activity*

Since November 2011, Nicola Sacco has been lecturer of:

- Transport Systems Planning (ENG)
- Advanced Design of Transport Systems (ENG)
- Maritime Transport (ENG)
- Theory and Analysis of Transport Systems (ENG - up to A.Y. 2018-2019)
- Planning and Design of Transport Systems (ENG - up to A.Y. 2018-2019)
- Design of Transport Systems (ITA - up to A.Y. 2018-2019)
- Technics and Economics of Transport Systems (ITA - up to A.Y. 2017-2018)
- Safety and Security of Transport Systems (ITA - up to A.Y. 2016-2017)

## *Research interests*

Currently Nicola Sacco carries out research in of modelling, analysing and optimising Transport and Logistics systems. The research activity is documented by around 70 scientific papers published in international journals, in chapters of international books and in proceedings of international conferences, all peer-reviewed. More in detail, the research activities are focused on the following topics:

- Performance optimization Ride-Sharing systems and Car-Sharing systems
- Performance evaluation of urban networks with autonomous vehicles
- Predictive maintenance of railway infrastructure
- Modeling, control, and optimization of urban traffic networks
- Analysis and optimization of logistics systems and freight transport
- Safety and security of transport systems

## *Grants*

**2018 - ONGOING**

### **DTF - Docks The Future**

European Commission

Participant

Ports are very much affected by socio-economic, political, geographical and legislative forces that test the whole port community on how to promptly react to external forces; at the same time structural and endogenous port characteristics may vary and evolve during the time. In this framework, the main concept that will be developed in this project focuses on the design of a definition of the “**Port of the Future**” notion and the related analysis of

the elements that determine this concept. Hereby, the common elements that are generally defined as crucial for the developments or existence of future ports will be considered accordingly. Once the elements defining concepts of “Ports of the Future” are identified a methodology will be developed aiming at clustering proposals and actions, as well as other ongoing activities in the port sector. The selected projects and actions will then be analyzed in detail through the use of relevant Key Performance Indicators. Based on these KPIs results from, these projects and actions will be monitored and evaluated accordingly towards the Port of the future Targets.

2015 - 2017

### **RCMS - Rethinking Container Management Systems**

European Commission

Participant

Container terminals serve thousands of ships, manage billions of TEUs and compete to serve the more and more vessels, while the introduction of larger ships will result in new challenges. While advances have been made in terminal automation (Automated Ground Vehicle (AGV), fast gate controls, yard cranes, etc.), with current technologies terminals are limited by their ability to maintain growth and quality of service. To address these trends and demands the Robotic Container Management System (RCMS) has been developed.

As a contribution to its implementation, Project main objectives are:

- to develop a detailed simulation model for RCMS to be evaluated in 2 Terminals (Gdansk and Koper) plus a set of generic simulation tools to be used in all terminals
- to assess and compare RCMS performance with other state-of-the-art container handling technologies for 2 ports (Gdansk and Koper), with focus on the comparison between RCMS solution and port surface extension
- **to assess impact of RCMS in a simulated transport network in terms of efficiency, reliability, capacity, performance indicators (travel times, average speed, etc.) and impacts (noise and air pollution) in the Port of La Spezia**

2015 - 2018

### **STM - Sea Traffic Management**

European Commission

Participant

A world where the control of information still lies with the information owner and the maritime distributed way of working still remains. A maritime world where the crew focuses on safe navigation instead of reporting, where port calls become even more efficient and just-in-time, making maritime shipping the main transport option for even more goods. We have seen the development of new services in many different industries, and the maritime sector can be revolutionised in ways that we cannot even imagine. Sea Traffic Management will overcome many of the challenges of

communication and information sharing between stakeholders in the maritime transport industry. It will create significant added value for the maritime transport chain, in particular for ship owners and cargo owners. By providing vessels with the ability to see each other's planned routes, navigators get a more complete picture of how surrounding vessels will influence their onward voyage. Using this data, other services are able to produce valuable information and offer advice to vessels on their routes, such as recommendations to avoid congestion in areas with high traffic, avoidance of environmentally sensitive areas, and maritime safety information. The information exchange between vessel and port actors will improve planning and performance regarding arrivals, departures and turnaround times.

2013 - 2016

### **PLUGIN - Platform for urban mobility and processing of heterogeneous traffic information**

Italian Ministry of Education University and Research  
Participant

2009 - 2012

### **ACIS - Advanced Cooperative Infomobility Systems**

Italian Ministry of Education University and Research  
Participant

## ***Editorial activity***

Scientific reviewer for the following international journals and conferences:

- IEEE Transaction on Intelligent Transportation Systems
- IEEE Conference on Intelligent Transportation Systems
- IET Journal of Intelligent Transport Systems
- EURO Journal on Transportation and Logistics
- Elsevier Transportation Research Part C
- Elsevier Transportation Research Procedia
- Elsevier Procedia: Social & Behavioral Sciences

## ***Assignments abroad***

Italian representative in OECD "Working Group on Big and Open Data in Transportation"

## ***Other professional activities***

### ***Patent***

OLMI, Roberto; DI TERLIZZI, Domenico; DABBENE Fabrizio; DELLA CROCE, Federico; GHIRARDI, Marco; SACCO, Nicola; (2015) Device and method for optimising the movement of automated-guided vehicles, and the like. International Application Number: PCT/IB2014/063349