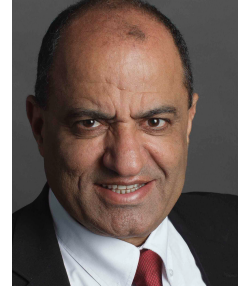


Resume of Isam SHAHROUR

- Former Vice President “Research, Innovation and Doctoral program”, Lille1 University, France
- Emeritus professor “Smart and Sustainable Cities”, Lille University France
- President of Smart Conseil, Consulting office in sustainability and smart systems, Lille, France
- Member of the Water Academy, Paris, France
- President of the ARSCO award committee about Smart Cities, Doha, Qatar
- In charge of promoting international scientific cooperation, IMT North Europe, France
- Associate editor of Smart Cities, Infrastructures, and Underground Space Journals.
- Expert in sustainability, resilience, and smart cities



Profile Overview

Isam Shahrou is an eminent figure in civil engineering and smart urban systems, with extensive expertise encompassing civil engineering infrastructure, sustainable development, intelligent systems, innovation, research management, and international cooperation. His proficiency as a scientific leader and contributor to social and economic development has been recognized through his appointments to esteemed bodies such as the Water Academy in France and the Tunisian Academy of Sciences, Letters, and Arts. His accolades include being named the Economist Laureate “Best Researcher in Northern France.” Presently, he is playing a significant role in advancing the transition to sustainable and intelligent infrastructures in the Middle East, serving as an expert for the Arab League Educational, Cultural, and Scientific Organization (ALECSO), where he trains high-ranking officials and policymakers and leads the ARSCO Award Committee “Towards a Smart City in Arab Countries.”

Background

Holding a degree from the esteemed École Nationale des Ponts et Chaussées in Paris, Isam's professional journey is distinguished by his extensive involvement in research, higher education, and project implementation within the private and public sectors. His focus areas include civil engineering infrastructure, sustainability, smart urban systems, and resilience. He has spearheaded numerous collaborative projects with industry and public sector partners across local, national, and European levels.

During his 40-year tenure as a faculty member at Lille University, France, Isam has fostered international solid collaborations across the USA, Europe, China, the Middle East, and North Africa. He has held significant academic management and policy-making positions, notably as Vice President of Research and Innovation at the University of Lille1 in France. He founded and led the Civil and Geo-Environmental Research Laboratory in the North of France, which aimed to pioneer innovative construction materials, civil engineering infrastructures, and sustainable urban development. Additionally, he chaired the "Lille Metropole Technopole" Innovation Agency, promoting regional economic growth through innovation.

Throughout his career, Isam has directed numerous large-scale research projects funded by local, national, and European authorities and the private sector. These projects have encompassed smart urban systems initiatives such as smart campuses, social housing, municipal buildings, eco-districts, and water management systems. He has supervised around 100 Ph.D. students, authored nearly 200 peer-reviewed journal articles, and managed industrial and public contracts worth over 5 million Euros.

I. Education

- 1982: Master's degree from the National School of Bridges and Roads, Paris.
- 1984: Ph.D. in civil engineering, National School of Bridges and Roads
- 1988: Accreditation to supervise research (HdR), University of Lille
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II. CAREER SUMMARY

- 1985 –1988: Assistant professor, Lille University, Polytech'Lille.
- January 1988 – September 1988: Research Engineer at the French Petroleum Institute)
- 1989 – May 2023: Professor at Lille University in Civil Engineering and Smart cities (France)
- Since April 1, 2022: President of Smart Conseil consulting
- Since May 1, 2023: Emeritus Professor, Lille University

Major responsibilities and positions

- 2007 – 2012: Vice-President of Research and Innovation, University Lille 1, France
- Participation in the executive committees of major national and local clusters for economic development in the North of France: Railway Transport, Innovative Materials, Digital Businesses, Health, Technical Textile, and Marine Products.
- Presidency of Technopole Lille Metropolis (TLM). TLM brought together the regional council, the MEL, the CCI, and the academic and business community. She supported economic development through innovation and the animation of the three technology parks (Eura-technology, Haute Borne, and La Plaine image).
- Presidency of the Centre for Innovation in Contactless Technology (CITC)). The CITC promotes contactless technology in the region and its use by companies (2011-2013).
- Presidency of the ARSCO Award Committee “Towards a Smart City in Arab countries”.
- Leader of the ALECSO (Arab League Educational, Cultural and Scientific Organization) training program “Smart and Sustainable Cities” for officials and policymakers in the Arab countries

As a vice president of Research and doctoral studies at the University of Lille 1, I managed all the research at Lille1 university, including around 40 research laboratories in fundamental and applied science, engineering, and social science with around 1500 researchers and 1000 PhD students. The management included the research strategy, cooperation with the industry, international cooperation, European projects, scientific careers, and research funding.

As a president of Technopole Lille Métropole (TLM), I supervised the cooperation among universities, local government, and the industry for the local economy development,

including support for the digital transition of enterprises, the development of technology parks in the field of digital technology, material science, and videos and games, and the international promotion. TLM employed around 30 full-time persons with a yearly budget of around 5 million €.

III. RESEARCH ACTIVITY

My research activity initially focused on civil engineering infrastructures, then focused on sustainable and smart cities and infrastructures. This activity involved **supervising around 100 Ph.D.**, **publishing** nearly 200 articles in scientific journals, participating in 3 European projects, and **international cooperation** with numerous universities and institutions, notably with the United States, China, the Middle East, and the Maghreb countries.

Major funded research projects about the smart city

1. *Smart City demonstrator project*

Object: Construction of a large-scale demonstrator of the Smart City—a scientific city in the North of France: Digital Model of the City, Data collection, urban network diagnostic, smart city road map.

Partners: Lille Metropolis, North Region, Water and energy providers

Budget: 1 million €

Position held: Team Leader

2. *Construction of a Smart Water System*

Object: Digital model of the drinking water and sewage networks, smart monitoring, data analysis, leakage detection, contamination detection, and dynamic management of the sewage system.

Partners: European Commission, North Water Company, Paris Water Company, ACCIONA, Calmwater, CEA, Vitens, Ministry of Sustainable Development.

Budget: 1 million €

3. *Smart Building*

Object: Construction of BIM model for social housing, design of Smart Monitoring System, Implementation in Social Housing buildings, Analysis, energy optimization, users comfort

Partners: Lille Metropole Habitat, Lille Metropolis, Eiffage Company, Region, Students resident managers, Ministry of Sustainable Development.

Budget: 1 million €

Position held: Team Leader

4. *Smart Energy*

Object: Digital modeling of the district heating and electrical networks, monitoring, data collection, and analysis, optimization of energy management,

Partners: Dalkia Energy, Eiffage Energy, Region, Ministry of Sustainable Development.

Budget: 500 000 €.

Position held: Team Leader

5. *Smart Eco-District*

Object: Design of a smart district including infrastructure monitoring, data collection, smart platform design and construction, social interaction

Partners: ArtoisComm, Saint-Quentin, Start-up, construction companies, urban services providers, Ministry of Sustainable Development

Budget: 200 000 €

Position held: Team Leader

6. *Smart City roadmap*

Object: Construction of the road map of 2 cities

Partners: Béthune, Lille, ArtoisComm, Saint-Quentin, Start-up, construction companies, urban services providers, Ministry of Sustainable Development

Budget: 100 000 €.

Position held: Team Leader

VII Recent papers (since 2021)

- 1) Aburas, H.; Shahrour, I.; Giglio, C. (2024) Route Planning under Mobility Restrictions in the Palestinian Territories. *Sustainability* 2024, 16, 660. <https://doi.org/10.3390/su16020660>
- 2) Itair, M.; Shahrour, I.; Hijazi, I. (2023) The Use of the Smart Technology for Creating an Inclusive Urban Public Space. *Smart Cities* 2023, 6, 2484-2498. <https://doi.org/10.3390/smartcities6050112>
- 3) Jafar, R.; Awad, A.; Hatem, I.; Jafar, K.; Awad, E.; Shahrour, (2023) I. Multiple Linear Regression and Machine Learning for Predicting the Drinking Water Quality Index in Al-Seine Lake. *Smart Cities* 2023, 6, 2807-2827. <https://doi.org/10.3390/smartcities6050126>
- 4) El Hage, J.; Shahrour, I.; Hage Chehade, F.; Abi Farraj, F. A Comprehensive Assessment of Buildings for Post-Disaster Sustainable Reconstruction: A Case Study of Beirut Port. *Sustainability* 2023, 15, 13433. <https://doi.org/10.3390/su151813433>
- 5) Jafar, Hanan A.; Shahrour, Isam; Mroueh, Hussein (2023) Use of a Hybrid Approach to Estimate Greenhouse Gas Emissions from the Transport Sector in Palestine CLIMATE
- 6) Jafar, Hanan A.; Shahrour, Isam; Mroueh, Hussein (2023) Evaluation of Greenhouse Gas Emissions in Conflict Areas: Application to Palestine SUSTAINABILITY
- 7) Hani, Samir; Toumi, Faycal; Bougherira, Nabil; Shahrour, Isam; Hani, Azzedine (2023) Numerical simulation of seawater intrusion in the lower Seybouse aquifer system, Algeria ACQUE SOTTERRANEE-ITALIAN JOURNAL OF GROUNDWATER
- 8) Dbouk, Talib; Visez, Nicolas; Ali, Samer; Shahrour, Isam; Drikakis, Dimitris (2022) Risk assessment of pollen allergy in urban environments SCIENTIFIC REPORTS
- 9) Jafar, Raed; Awad, Adel; Jafar, Kamel; Shahrour, Isam (2022) Predicting Effluent Quality in Full-Scale Wastewater Treatment Plants Using Shallow and Deep Artificial Neural Networks SUSTAINABILITY
- 10) Judeh, Tariq; Shahrour, Isam; Comair, Fadi (2022) Smart Rainwater Harvesting for Sustainable Potable Water Supply in Arid and Semi-Arid Areas SUSTAINABILITY
- 11) Judeh, Tariq; Almasri, Mohammad N.; Shadeed, Sameer M.; Bian, Hanbing; Shahrour, Isam (2022) Use of GIS, Statistics and Machine Learning for Groundwater Quality Management: Application to Nitrate Contamination WATER RESOURCES
- 12) Zhang, Yonglai; Xie, Xiongyao; Li, Hongqiao; Zhou, Biao; Wang, Qiang; Shahrour, Isam (2022) Subway tunnel damage detection based on in-service train dynamic response, variational mode decomposition, convolutional neural networks and long short-term memory AUTOMATION IN CONSTRUCTION
- 13) Zhai, Junli; Wang, Qiang; Yuan, Dongyang; Zhang, Weikang; Wang, Haozheng; Xie, Xiongyao; Shahrour, Isam (2022) Clogging Risk Early Warning for Slurry Shield Tunneling

in Mixed Mudstone-Gravel Ground: A Real-Time Self-Updating Machine Learning Approach
SUSTAINABILITY

- 14) Aburas, Hala; Shahrour, Isam (2021) Impact of the Mobility Restrictions in the Palestinian Territory on the Population and the Environment SUSTAINABILITY
- 15) Judeh, Tariq; Shahrour, Isam (2021) Rainwater Harvesting to Address Current and Forecasted Domestic Water Scarcity: Application to Arid and Semi-Arid Areas WATER
- 16) Mashhadi, Neda; Shahrour, Isam; Attoue, Nivine; El Khattabi, Jamal; Aljer, Ammar (2021) Use of Machine Learning for Leak Detection and Localization in Water Distribution Systems SMART CITIES
- 17) Shahrour, Isam; Xie, Xiongyao (2021) Role of Internet of Things (IoT) and Crowdsourcing in Smart City Projects SMART CITIES
- 18) El Ghazouli, Khalid; El Khatabi, Jamal; Soulhi, Aziz; Shahrour, Isam (2021) Model predictive control based on artificial intelligence and EPA-SWMM model to reduce CSOs impacts in sewer systems WATER SCIENCE AND TECHNOLOGY
- 19) Lagsaiar, Lamine; Shahrour, Isam; Aljer, Ammar; Soulhi, Aziz (2021) Use of smart monitoring and users' feedback for to investigate the impact of the indoor environment on learning efficiency ENVIRONMENTAL ECONOMICS AND POLICY STUDIES
- 20) El Ghazouli, Khalid; El Khatabi, Jamal; Shahrour, Isam; Soulhi, Aziz (2021) Wastewater flow forecasting model based on the nonlinear autoregressive with exogenous inputs (NARX) neural network H2OPEN JOURNAL
- 21) Kassem, Taher; Shahrour, Isam; El Khattabi, Jamal; Raslan, Ahmad (2021) Smart and Sustainable Aquaculture Farms SUSTAINABILITY
- 22) Ramadan, Lara; Shahrour, Isam; Mroueh, Hussein; Chehade, Fadi Hage (2021) Use of Machine Learning Methods for Indoor Temperature Forecasting FUTURE INTERNET
- 23) Shahrour, Isam; Bian, Hanbing; Xie, Xiongyao; Zhang, Zixin (2021) Smart technology applications for the optimal management of underground facilities UNDERGROUND SPACE
- 24) Lagsaiar, Lamine; Shahrour, Isam; Aljer, Ammar; Soulhi, Aziz (2021) Modular Software Architecture for Local Smart Building Servers SENSORS
- 25) Wehbe, Rania; Shahrour, Isam (2021) A BIM-Based Smart System for Fire Evacuation FUTURE INTERNET
- 26) Shahrour, Isam; Zhang, Wengang (2021) Use of soft computing techniques for tunneling optimization of tunnel boring machines UNDERGROUND SPACE
- 27) Wehbe, Rania; Shahrour, Isam (2021) Assessment and Improvement of Anti-COVID-19 Measures in Higher Education Establishments SUSTAINABILITY
- 28) Wang, Qiang; Xie, Xiongyao; Shahrour, Isam; Huang, Yu (2021) Use of deep learning, denoising technic and cross-correlation analysis for the prediction of the shield machine slurry pressure in mixed ground conditions AUTOMATION IN CONSTRUCTION
- 29) Judeh, Tariq; Bian, Hanbing; Shahrour, Isam (2021) GIS-Based Spatiotemporal Mapping of Groundwater Potability and Palatability Indices in Arid and Semi-Arid Areas WATER
- 30) Hou, Xiao-ping; Chen, Sheng-hong; Shahrour, Isam (2021) Judgement of rapid drawdown conditions in slope stability analysis BULLETIN OF ENGINEERING GEOLOGY AND THE ENVIRONMENT
- 31) Mezeh, Reda; Sadek, Marwan; Hage Chehade, Fadi; Shahrour, Isam (2021) A frequency and velocity-dependent impedance method for prediction of rail/foundation dynamics EARTHQUAKE ENGINEERING AND ENGINEERING VIBRATION