

Smart Research Network

University of Stavanger

14.09.2020

Directory of Smart City Researchers



UiS Smart City Researchers Directory

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# Researchers

## Ali Gohar, Department of Electrical Engineering and Computer Science

Ali Gohar is trained in heuristic algorithm design and in mathematical modeling for the resource allocation problems in wired and wireless networks. His previous research interests were focused on enhancing the safety of autonomous vehicles, multimedia streaming to support heterogeneous devices and applying software defined networking to reduce operation cost of datacenter networks. Since September 2019, he is pursuing a PhD under Associate Professor Gianfranco Nencioni and Professor Chunming Rong, at the University of Stavanger (UiS).

His current research work focuses on mobile communications technologies under the smart city initiative at UiS, to enable the smart city of the future. He is working on approaches to apply artificial intelligence for the orchestration and control of the 5G networks, and data resources, with different objectives within the smart city applications, such as energy efficiency, quality of service, and economical cost reduction, using 5G network slicing.

### Research interests: emerging networking technology; heuristic algorithm design; mathematical modelling; machine learning; resource allocation.

[Ann Kristin Vatland, Associate Professor Associate at CORE, Center of Organelle research](https://www.uis.no/about-the-university/contact-us/employees/vatland-ann-kristin-article134572-11199.html)

Extended education within plant biochemistry and environmental technology. PhD and postdoc in photosynthesis and the analysis of pigment containing protein complexes in plants. Current research field within aquaculture including organisms of lumpfish, scallops, oysters and seaweeds. Special focus on seaweed life cycles, growth factors and analysis of bioactive components for human health benefits.

Research interests in relation to smart city: Economically and ecologically sustainable solutions including new sources of medicine, nutrition, foods and energy.

A specific interest in project development, research innovation, marketing and entrepreneurship.

### Research interests: Marine biotechnology; biochemistry; biomedicine; environmental monitoring; sustainable technology

## [Ari Krisna Mawira Tarigan, Associate Professor, Department of Safety, Economics, and Planning](https://www.uis.no/about-the-university/contact-us/employees/tarigan-ari-krisna-mawira-article124892-11199.html)

Ari Krisna Mawira Tarigan engages with the group of city planning at the department where he teaches infrastructure-related courses like water and waste water systems and transportation planning, and risk analysis for critical infrastructures as well as supervises undergraduate and graduate students for their final research projects. Ari obtained his Doctoral of Engineering in Transportation Engineering and planning from Kyoto University, Japan, in 2009 and Master of Science in Urban Infrastructure Engineering from IHE Delft, Delft, Netherlands in 2006. His research areas include road safety, traffic engineering, travel behaviour, transportation planning, water and wastewater system, urban infrastructure planning. He has published 18 articles in peer-reviewed journals.  Ari Tarigan awarded a competitive UiS's research grant for a mobility program to conduct a research stay at Kyoto University, Japan in the last summer 2019. Together with NIBIO, he earned a generous research grant from the University Fund to execute a research project on "Green Infrastructure for livable and sustainable cities" (2019-2023). Prior to working in academia in 2018, Ari Tarigan was a project engineer in a construction company and a research institution in Norway for about 6 years. He is one of team members for the smart city research network at the University of Stavanger. Ari Tarigan has been been granted an award of The “Åsgard Research Programme", managed by the Department for scientific cooperation of the French Embassy in Norway, in which he is invited for a one-week visit to France-based institution in Autumn 2020.

### Research interests: Water and waste water infrastructure; green infrastructure; transportation planning; urban infrastructure planning; travel behavior; road safety.

## [Arnfinn A. Eielsen, Department of Electrical Engineering and Computer Science](https://www.uis.no/about-the-university/contact-us/employees/eielsen-arnfinn-aas-article122981-11199.html)

Arnfinn A. Eielsen’s area of expertise is theoretical and applied control engineering and signal processing. This includes mathematical modelling of physical systems and methods for optimisation, identification, estimation, control and control law synthesis.

He completed his PhD in Engineering Cybernetics at the Norwegian University of Science and Technology, and subsequently worked at The University of Newcastle, Australia as a full-time researcher, mainly with applications in motion control (robotics), precision sensors, actuators and instrumentation. He joined the Department of Electrical Engineering and Computer Science at the University of Stavanger as an Associate Professor in 2018.

He is currently looking for applications in energy systems. Control engineering provides key enabling knowledge and tools for autonomous and optimal operation of a variety of systems, including heating, ventilation and air-conditioning (HVAC) systems in and between buildings, as well as in power conversion, distributed power generation and transmission; all technologies that will be relied upon in a Smart City context.

### Research interests: physical modelling; system identification; optimal control; non-linear estimation; instrumentation and measurements.

## [Barbara Marie Sageidet, Associate Professor, Department of Early Childhood Teacher Education](https://www.uis.no/about-the-university/contact-us/employees/sageidet-barbara-maria-article75057-11199.html)

Barbara Maria Sageidet is associate professor in science, at the Department of early childhood teacher education, at the University of Stavanger, Norway. She has a background in ecology, botany, and paleoecology and a PhD in soil and environmental sciences. Barbara has a research focus on science education and sustainability in (early childhood) education, and on human – nature interrelationships and interactions, both today (including children) and in prehistory (using soil micromorphology). Further, Barbara has an interest in environmental citizenship, urban childhood, gardens, urban sediments, inquiry learning, and other interdisciplinary and sustainability related themes. As main supervisor, she is involved in the Smart City PhD project: “Children and a smart sustainable city”. Barbara is co-leader of the work package ‘Eco citizens’ of the National Kindergarten Knowledge Center, Western Norway University of Applied Sciences (KINDknow), and a member of The Greenhouse, an Environmental Humanities Initiative at the University of Stavanger. Since 2010, she is an active member of the ‘Transnational Dialogues in Research in Early Childhood Education for Sustainability (TND)’.

### Research interests: Environmental citizenship; urban childhood; sustainable development; inquiry learning; early childhood education

## [Daniela Müller-Eie, Department of safety, economics and planning](https://www.uis.no/about-the-university/contact-us/employees/mueller-daniela-article76087-11199.html)

Daniela Müller-Eie is an associate professor in urban design and development and the study program leader for city and regional planning and the University of Stavanger. She has a background in architecture and urban design, and a PhD in urban sustainability from the University of Glasgow / Mackintosh School of Architecture.

Daniela believes that a smart city should be sustainable, resilient and livable. And she understands that individual behaviour within urban settings is at the core of achieving more sustainable and smart cities. Therefore, she devotes her research activities to understanding the interactive effects between physical urban structures, and socio-cultural and psychological conditions. Her focus is on achieving more sustainable travel behaviour and increasing the quality and perception of public space. In her research, she uses spatial analysis, GIS, travel surveys, behaviour mapping and perception mapping.

Daniela currently co-supervises three smart city PhD students.

### Research interests: Urban planning; travel behavior; urban quality; sustainability; spatial analysis

## [Elisa Thomas, Center for Innovation Research, UiS Business School](https://www.uis.no/about-the-university/contact-us/employees/thomas-elisa-article113129-11199.html)

Elisa Thomas is a post-doctor at the Centre for Innovation Research at the University of Stavanger Business School, in Norway. She coordinates the project Cooperation on Education and Research for the Studies of Innovation Ecosystems in partnership with Unisinos University, funded by the Norwegian Agency for International Cooperation and Quality Enhancement in Higher Education (DIKU) and CAPES from Brazil. Her research interests focus on entrepreneurship and innovation ecosystems, entrepreneurial education and intention, start-ups, business incubators, technology parks and innovation intermediaries. Previously, she has worked as a teacher of entrepreneurship and innovation and course coordinator for almost 10 years at Unisinos University, in Brazil.

### Research interests: Entrepreneurship and innovation; Start-ups; Business incubators; technology parks; entrepreneurial education

## [Fabio Hernandez Palacio, Department of safety, economic and planning](https://www.uis.no/about-the-university/contact-us/employees/hernandez-palacio-fabio-alberto-article125048-11199.html)

Fabio Hernández Palacio is an associate professor in urban design and planning at the Department of Security, Economics, and Planning at the University of Stavanger. He is an architect graduated from the National University of Colombia and the TU Delft in The Netherlands. He completed his PhD at the Department of Architecture and Planning at Norwegian University of Science and Technology with a thesis entitled “Urban Densification and the Sustainable City in Norway: A Study of Drivers and Barriers”. He has several years of experience as a consultant for urban planning and urban design and as a university lecturer in urban design.

His research interests revolve around how the built environment can influence sustainability, looking at different aspects such as urban quality, urban form, urban density and densification. In his research, he has studied different aspects of the sustainable city, such as densification as a planning strategy, the relationship between density and environmentally friendly transport, the relationship between urban quality and sustainability, and the transition towards more sustainable cities. He is an enthusiastic of technology as a tool to improve efficiency and quality in the built environment, but also believes that the “smart” in the cities can be found in many traditional and well-known solutions.

### Research interests: Urban sustainability; urban form; densification; urban density; urban quality

## [Finn Arne Jørgensen, Department of Cultural Studies and Languages](https://www.uis.no/about-the-university/contact-us/employees/jorgensen-finn-arne-article118256-11199.html)

Finn Arne Jørgensen is Professor of Environmental History at University of Stavanger. His research includes studies of waste and recycling histories in Scandinavia and the US, the history of the Norwegian leisure cabins, material culture and consumption studies, and the connections between environmental humanities, media studies, and digital humanities. He has become particularly interested in how technologies mediate and enable human relationships with nature, most recently in a large project studying the relationship between technology, history, and the human sense of place. He also leads a large Horizon 2020 project on citizen science and environmental citizenship. Within a smart city framework, he is particularly interested in questions of technology, citizenship, and participation; the role of locative technologies such as the GPS in making smart cities function; the relationships between smart cities and nature.

### Research interests: location; citizenship; mediation; smartness; environment.

For more information, visit <https://finnarne.net> or connect on Twitter at <https://twitter.com/finnarne>

## [Gianfranco Nencioni, Department of Electrical Engineering and Computer Science](https://www.uis.no/about-the-university/contact-us/employees/nencioni-gianfranco-article123475-11199.html)

Gianfranco Nencioni is expert in modelling and high-performance solving of resource allocation problems in emerging networking paradigms. His past research activity was mainly focused on dependability in Software-Defined Networking and Network Function Virtualization and energy-aware routing and network design in both wired and wireless networks. His current research activity is focussing on 5G Network Slicing and Multi-Access Edge Computing. He is the leader of a recently funded NFR project, called 5G Management and Orchestration for Data and Network Integration.

Within Smart City, his research interest is focused on the optimization of the future communication technologies to meet the needs of citizens, urban authorities, and stakeholders. He is the leader of the working package on communication and data computing of a recently proposed Center for Research-based Innovation, called CityZEN.

### Research interests: emerging networking technology; modelling; resource allocation; energy efficiency; dependability.

## [Hassan Gholami, Department of safety, economics and planning](https://www.uis.no/about-the-university/contact-us/employees/gholami-hassan-article127693-11199.html)

BIPV/ Solar Energy in Urban Areas

2018-2021: PhD Candidate, Solar Energy (BIPV) in urban areas

My field of interest in the smart city is climate and sustainability, and more specifically, the ENERGY. I am currently working on the BIPV potential and challenges in urban areas. I am also working on the BIPV contribution to the zero-energy city concept.

### Research interests: Renewable Energy Systems; Zero Energy City; Energy Management and Planning; Electrical and Energy Systems Modeling; Electricity Market

## [Homam Nikpey, Associate Professor, Department of Energy and Petroleum Engineering](https://www.uis.no/about-the-university/contact-us/employees/nikpey-somehsaraei-homam-article137651-11199.html)

Homam Nikpey is Associate Professor in Sustainable Energy Solutions at University of Stavanger, Department of Energy and Petroleum Engineering. He received his PhD at University of Stavanger in system analysis, modelling and monitoring of distributed energy technologies. His research has focused on distributed energy technologies and energy system integration, AI and smart energy systems, system modelling and energy efficiency. Nikpey has also participated in several industry projects for developing digital twins for different applications in oil and gas industry through the entire life cycle from design to operation as well as verifying and validating them at the component and system level.

His research interests in relation to smart cities include decentralized energy systems, intelligent management platforms and smart solutions for optimum operation of district energy systems.

### Research interests: Distributed energy systems; smart energy management systems; artificial intelligence

## [Ingjerd Jevnaker Strand, Department of Social Studies](https://www.uis.no/about-the-university/contact-us/employees/straand-ingjerd-jevnaker-article138491-11199.html?articleID=138491&categoryID=11199)

Ingjerd is PhD fellow in Psychology and Special advisor in the Smart City Stavanger. She is an experienced service designer and advisor in innovation methods, strategy and creative problem solving with 15 years+ of experience in service- and user-centered design, digitalization, concept development and project management, in particular in the fields of green mobility and/or digitalisation. Ingjerd has extensive experience in leading projects from early insight, concept development, piloting and implementation. She holds a MSc in Business Administration majoring in Innovation and Entrepreneurship.

### Keywords: Design thinking and innovation, mobility, design methods, persuasive technology, behaviour change, Human-centred design, Research through design

## [Jan Frick, UiS Business School](https://www.uis.no/about-the-university/contact-us/employees/frick-jan-article75372-11199.html)

Operation Management, SupplyChain, Lean Management, Entrepreneurship, Industrial applications of ICT, Project Management, Modeling System Dynamics

I am involved in an Erasmus+ Knowledge Alliance application for establishing vitual lab for smart city technologies. I have supervised more than 10 master theses about smart cities.

### Research interests: sustainable operations; logistic; entrepreneurship; modelling & simulation of business processes; digitalization

## [Johana Montalvan Castilla, Department of Early Childhood Education](https://www.uis.no/article.php?articleID=137790&categoryID=11198)

Johana Montalvan Castilla is a doctoral research fellow at the Department of Early Childhood Education, at the University of Stavanger. Her current PhD project focuses on the active participation and role of children in creating Smart, sustainable cities. Her research has a participatory approach, highlighting the voices, opinions and experiences of children; including also parents, teachers, policy makers and other important social actors.

Johana has a background in Social Sciences and Humanities, particularly social anthropology and education. Prior to her PhD at UiS, Johana was based in the Arctic and worked actively as a university teacher and as a researcher in two different international projects. In this previous position, she conducted research on traditional and local sustainability practices, on Arctic smart cities and on the impact of digital technologies on civil society.

### Research interests: Environmental citizenship, urban childhood, children’s agency and participation, Sustainable development, inclusive and liveable smart cities

## [Kidane Fanta Gebremariam, Associate Professor, Archeological Museum](https://www.uis.no/about-the-university/contact-us/employees/gebremariam-kidane-fanta-article101469-11199.html)

* Applications of diversified instrumental methodologies for the investigation of archaeological, historical and artistic materials: Archaeometry and Heritage\Conservation Sciences
* Determinations of the material compositions, past technologies, material microstructures, authenticity, provenance, dating, state of conservation of materials, etc.
* The materials investigated are diverse: paintings, lithics, building materials (plasters, mortars, and daubing), metals, slags from metallurgic activities, ceramics, glasses, enamels, coins, organic materials, weathering and deterioration products, plastics, bones, etc.
* Working at the interface of various disciplines: multidisciplinary engagements involving experts and understandings from the arts, humanities, sciences and technologies

**Research interests related to smart cities**

* Promotion of the understanding of multidisciplinary engagements and their benefits using the museum arena and the environment we live in. Hands-on experiences and demonstrations in the form of simplified experimentations. The materials investigated: those constituted in archaeological and other cultural heritage objects, or environmental pollutants (microplastics, particles in air pollutants, etc.). The definitions of the problems in the inspiring investigations\demonstrations and interpretations of the results would involve multidisciplinary approaches. Different didactic methods: involving relevant participants (students, teachers, teacher educators, analysts, etc.) to support active teaching-learning.
* Popular science, using current multi- and interdisciplinary studies in the museum environments, to promote better experience of the public in understanding and enjoyment of the exhibits. Includes appreciation of the activities behind the scene; spanning field excavations, archaeological and historical interpretations, scientific studies and conservation interventions (informal education opportunities). Appreciation and eventual preservation of the tangible and intangible cultural heritage, and natural resources, for the wide-ranging benefits of the current and future generations in a sustainable manner. These experiences can inspire students and, the wider public, to be inquisitive about and interested in diverse disciplines. Promote the importance of gaining better and sound understanding when objects and phenomena are closely examined from multidisciplinary perspectives.

### Research interests: Science\Environmental Education; Multidisciplinary Engagements\Perspectives; Popular Science; Hands-on Experience; Active Learning

## [Knut Erik T. Giljarhus, Department of Mechanical and Structural Engineering and Materials Science](https://www.uis.no/about-the-university/contact-us/employees/giljarhus-knut-erik-article101025-11199.html)

Knut Erik T. Giljarhus is an Associate Professor within the field of computational fluid dynamics at the Department of Mechanical and Structural Engineering and Materials Science. He holds a PhD from the Norwegian University of Science and Technology. His thesis dealt with the development of mathematical models for separation of water from oil by means of an electrical field including surface-active agents. After his PhD he worked for SINTEF Energy, primarily with the development of a method for fluid-structure interaction in CO2 pipelines. In 2012 he started working for Lloyd's Register with simulations of gas dispersion, fires and explosions. Here, he was also acting as technical lead for the consequence modelling group. He started teaching at the University of Stavanger in 2014 and in 2018 he started a full position as an associate professor. His research interests include computational fluid dynamics, wind engineering, aerodynamics and multiphase flows. Within smart cities he has worked with simulations of urban wind flows, air pollution, ventilation and hydrology.

### Research interests: Computational fluid dynamics; Wind engineering; Aerodynamics; Multiphase flow; Turbulence modelling

## [Kristane M. F. Lindland, Associate Professor, Department of Media and Social Sciences](https://www.uis.no/about-the-university/contact-us/employees/lindland-kristiane-marie-fjar-article118205-11199.html)

I am Associate Professor in Change Management. My research revolves around how people perceive reality, sustainability and possibilities for change in a wide range of areas: fish farming, municipal service development, smart cities and the transition into a zero-emission society, and the development of local areas. Currently I teach Responsible Innovation and Entrepreneurship, and Applied Methods, among other courses.

My research interest has increasingly been directed towards how we can realize the zero-emission future. This is a cross-disciplinary challenge involving both different forms of energy sources, storage solutions, policy development, and business models and consumer behavior. As the coordinator of the Consumer sub-program in the inter-disciplinary EERA jp Energy System Integration, I see a need to gain in-depth insight in how people resonate around their own reality is thus valuable for imagining how people will respond to new energy policies in developing sustainable energy solutions.

Research interests within Smart Cities:

Realizing the concept of Smart Cities is a central strategy for how to work towards the zero-emission future. A central aspect of realizing the green shift has been about consumer acceptance, where stakeholders are eager to find out how we can make people act the way we want them to act. Often the problem is not that people do not understand, but rather that the changes demanded are not seen as just. Another aspect is how emerging events can force us to radically change our previous understandings of situations and what our current situation is. Paying attention to how people interpret reality and the demand for realizing the green shift is thus imperative for imagining how people will respond to different initiatives. Getting insight in the percpetions, ideas and resources people are able to mobilize, can contribute to see alternative solutions to the top-down approaches that are usually embedded in established logics and solutions.

### Research interests: meaning-making; innovation; energy justice; bottom-up solutions; re-interpreting progress

## [Marianne Storm, Professor, Department of Public Health](https://www.uis.no/article.php?articleID=73471&categoryID=11198)

Marianne Storm is professor at the Department of Public Health at the University of Stavanger. She holds a PhD in Management from the University of Stavanger with the thesis “Service user involvement in inpatient mental health”, and a Master of Health Science from the University of Bergen. She is a nurse by training. Her research interest emphasize patient- and user involvement, care coordination and service integration, and digital health technology. She has conducted complex interventions in mental health and elderly care to improve user- and patient involvement through mechanisms of organizational learning, education, and interprofessional collaboration. In the Smart City network, she is particularly interested in digital technologies, and how-to co-design digital solution that will be responsible and benefit patients and service users with complex health care needs. Storm was the Norwegian Harkness Fellow in Health Care Policy and Practice 2017-2018 at Dartmouth College in United States.

### Research interests: user involvement, co-design, digital technology, responsible and social innovation

## [Marte C. W. Solheim, Associate Professor and Head of Stavanger Centre for Innovation Research, UiS Business School](https://www.uis.no/about-the-university/contact-us/employees/solheim-marte-cecilie-wilhelmsen-article76028-11199.html)

Solheim carries out research on **diversity** and **innovation**, combining insights from organizational theory, innovation studies and economic geography. She is particularly interested in understanding how innovation is inspired when a variety of diverse knowledge intersect, and the contextual factors affecting this association. Solheim has studied the nexus between various forms of diversity and different types of innovation, and has particularly focused on the role of foreign-born workers and innovation & export, experience-based and educational diversity and innovation, diversity management and global business.

Research interests in relation to smart cities encompass diversity and inclusion, smart city initiatives and policy implementation, inequality and segregation in a smart city perspective. Solheim is supervising PhD-Candidate Xiangyu Quan on her smart city PhD-project, read more [here](https://www.uis.no/research-areas/smart-city/research-themes-and-projects/politics-and-innovation/).

### Research interests: Diversity, Innovation, Inclusion, Smart Cities, Immigration

## [Mehdi Torkaman, Department of Cultural Studies and Languages](https://www.uis.no/about-the-university/contact-us/employees/torkaman-momeni-mehdi-article140989-11199.html)

Mehdi Torkaman is a PhD student in Environmental Humanities with the Greenhouse at the University of Stavanger. He is interested in exploring technologically-mediated narratives that characterize urban activities and inform our notion of environmental ethics. His current project *Green with a Screen: Environmental Citizenship in the Smart City* focuses on the city of Stavanger's smartification. He combines empirical studies of ICT technology with science fiction literature and cyborg ontologies to radically detrivialize and criticize our everyday interactions with energy through digital interfaces.

### Research interests: Environmental Citizenship; Ecocriticism; Embodiment of Energy; Posthumanism; Data Technology

## [Mohsen Assadi, Professor, Department of Energy and Petroleum Engineering](https://www.uis.no/about-the-university/contact-us/employees/assadi-mohsen-article75519-11199.html)

Professor Assadi received his MSc in mechanical engineering and his PhD in Thermal Power Engineering from Lund University in Sweden. He was head of division of Thermal Power Engineering at Department of Energy Sciences at Lund University between 2006-2011.

In 2007, Prof. Assadi started his current position as professor in gas technology at University of Stavanger in Norway. He has been director of the Center for Sustainable Energy Solutions and is leader of the program area for geothermal energy at University of Stavanger.

Prof. Assadi is a visiting professor at London City University and Sheffield University in UK. Prof. Assadi has been leading several nationally and internationally financed projects and has supervised more than 20 PhD students.

### Research interests: Energy system integration and optimization; Clean energy technologies; Artificial intelligence for energy systems

## [Oluf Langhelle, Professor, Department of Media and Social Sciences](https://www.uis.no/about-the-university/contact-us/employees/langhelle-oluf-article75393-11199.html)

Oluf Langhelle is Professor in political science at University of Stavanger, Department of Media and Social Sciences, Norway. He took his Dr. Polit. degree at University of Oslo, Norway. His research has focused on the concept of sustainable development and follow-up, strategies for sustainable development, environmental politics and policy, including oil and gas policies in the Arctic, transitions towards low carbon societies, focusing on Carbon Capture and Storage (CCS), and the Doha Round Negotiations in the World Trade Organization (WTO).

**Research interests related to smart cities**

His research interests in relation to smart cities include climate politics and policies, climate mitigation strategies, energy transitions, renewable energy, battery electric vehicles, cities actual room to manoeuvre, and city - state relationships.

Recent publications include Langhelle, O., Meadowcroft, J. and Rosenbloom, D. (2019). “Politics and technology: deploying the state to accelerate socio-technical transitions for sustainability”, in J. Meadowcroft, D. Banister, E. Holden, O. Langhelle, K. Linnerud and G. S. Gilpin (eds.), What next for sustainable development? Our Common Future at thirty. Cheltenham: Edward Elgar. Langhelle, O. (2017). “Sustainable development – linking environment and development”, in J. Meadowcroft and D. Fiorino (eds.), Conceptual innovations in environmental policy, Cambridge: MIT Press. Kristoffersen, B. and Langhelle, O. (2017). “Sustainable development as a Global-Arctic matter - Imaginaries and controversies”, in K. Keil and S. Kneckt (eds.), Beyond Geo-Politics: Arctic Governance in Global Perspective, London: Palgrave Macmillan.

### Research interests: Energy transitions; Renewable energy; Urban transitions; Climate mitigation; Politics and policies

## Siddharth Sareen, Associate Professor in Energy and Environment, Department of Media and Social Sciences

Siddharth works on the governance of energy transitions at multiple scales. As an environmental social scientist, his work is grounded in development studies, human geography and political ecology. He has studied diverse aspects of energy systems, ranging from resource extraction to land use impact, from electricity distribution to the rollout of solar energy sources, and from evolving energy infrastructures to everyday energy use practices. He is keen to combine insights from low-carbon energy transitions with emergent changes in urban mobility and to work across sectors to ensure socially equitable transitions.

Siddharth is centrally involved in two European networks on energy poverty and positive energy districts. Having worked in seven countries, he is well networked in energy social science. He has published in a wide array of journals on energy transitions in European countries, notably Portugal and Norway, as well as on India. He (co-)supervises PhD and Master students and has led/partnered several research projects on solar energy rollout, smart meters and digitalisation, and on the political economy of infrastructural change. A current priority is to extend analytical work on accountability and legitimacy at the urban scale.

### Keywords: just mobility transitions; energy governance; digitalisation; accountability; institutions

## [Tatiana Iakovleva, UiS Business School](https://www.uis.no/employee/UHQrTzVFS0V3b3UxVE0xb3IzelRidw)

Tatiana Iakovleva holds a Professor of Entrepreneurship in Stavanger Business School, Stavanger Center for Innovation Research, University of Stavanger, Norway. She received her Ph.D. in Management from Bode Graduate School of Business, Norway (2007), with focus on Entrepreneurship and Innovation. Her Master of Science in Business is from Norway (Bodø, Nord University) and from Russia (St. Petersburg, Baltic State Technical University) Dr. Iakovleva has over 50 publications in international per-reviewed journals on the topic of responsibility, innovation and entrepreneurship. She has portfolio of over 15 research projects, and is currently leading an international research project on “Releasing the power of users” about responsible innovation in digital health across 6 countries funded by Norwegian Research Council, in which the research team helps to create methodology of user involvement and strategic partnerships for Innovation Lab owned by Norwegian Smart Care Cluster.

**Smart City direction:** My areas of interest includes intentions of individuals to start new business and in that sense I am interested in the behavioral research (Theory of Planned behavior). This can be applied in a way to intention of people to use for example digital technology (technology acceptance models) that are relevant for Smart City concept. I am also concerned with ethical issues of technology acceptance. How can we make sure that weak user voices are taken into considerations when new smart technologies are developed and penetrate the market?

How innovations developed and taken to market – by firms. Those firms do exist in a eco-system of different actors, formal regulations and behavioral/cultural norms that shape our behavior. Thus, understanding those needs might be another area of interest.

### Research interests: innovation; ethics; responsibility; entrepreneurship; user voices

## [Trond-Ola Hågbo, Department of Mechanical and Structural Engineering and Materials Science](https://www.uis.no/employee/S0RKbGpJWHhnQncyZlhidGhLajRVdw)

Trond-Ola Hågbo is a Ph.D. Candidate within urban wind simulations and renewable energy at the Department of Mechanical and Structural Engineering and Materials Science. He holds a M.Sc in "Energy, Climate and Environment" from UiT and is one of three Ph.D. candidates working on the Future Energy Hub as of spring 2020. Future Energy Hub is a UiS based project collaborating with local industry partners, other research facilities as well as public institutions. The overall goal of the project is to accelerate the development of greener buildings and districts.

The focus of Trond-Ola's Ph.D. project is to develop efficient tools to predict/simulate wind behavior in urban environments. The improved tools can aid architectures and city planners in making better decisions regarding pedestrian wind comfort. Another utilization is to evaluate the feasibility of potential locations for wind turbines in urban areas.

His research interests concerning smart cities are urban wind simulations and generations of realistic 3D models of urban areas.

### Research interests: Computational fluid dynamics; Wind engineering; Turbulence modeling; Renewable energy; Urban 3D model generation

## [Tegg Westbrook, Department of Safety, Economics and Planning](https://www.uis.no/employee/cHVLQjNGOUJFb1duQ3RteEhSa0xHZw)

I am an Associate Professor in City and Regional Planning. My academic background is in Human Geography, International Politics and Globalisation Studies. I would describe myself as a technologist interested in the area of military, security and police technologies and their utilisation in urban planning contexts, smart homes, and in the protection of critical national infrastructure. I have recently undertaken research into the implications of GPS jamming and its wider impacts in civilian areas. My current research interest includes exploring the positive and negative societal implications resulting from the global proliferation of dual-purpose "DIY" smart home security appliances. I am also interested in how the electromagnetic spectrum is utilised to enforce control in safety and security contexts.

My research interests in relation to smart cities is the transferability of the ‘Smart Security’ concept – traditionally seen in light of cyber and smart home security - into the concept of smart cities. I am also interested in the opportunities and limitations of geofencing and telematics in the safety and security of urban places. I have also hypothesised that the wider use of tracking devices in smart cities will drive the incentive for people to seek privacy illicitly by using GPS jammers.

### Research interests: Perimeter intrusion detection systems (PIDS); telematics; geofencing; jamming; spoofing

## [Veronika Budovska, Department of Media and Social Sciences](https://www.uis.no/employee/dW5ib2tTdWlJdGw1QUZZSVRXYWwvQQ)

Veronika Budovska holds the B.S. and M.S. degrees in Management of Socio-cultural Sphere from Kyiv National University of Culture and Arts, as well as M.S. in International Hotel and Tourism Leadership from the University of Stavanger. She is currently a PhD candidate, teaching and research staff at the Faculty of Social Sciences, University of Stavanger. Her research project is organized under the Research Network for Sustainable Energy at UiS and NORCE and focuses on intermediaries in urban sustainability transitions. She has strong research interest in the areas of public management and governance, urban planning, and environmental psychology.

### Research interests: sustainability transitions; agency; intermediaries; boundary spanning; experimental cities; urban governance.

## [Xiangyu Quan, Department of Innovation, Management and Marketing](https://www.uis.no/about-the-university/contact-us/employees/quan-xiangyu-article138371-11199.html)

Xiangyu Quan is a PhD candidate at the Department of Innovation, Management and Marketing at the University of Stavanger. Her research interest lies in the intersection between new technology and business. Currently, her project is to explore how smart city initiatives unfold in different locales, with a focus on Public-Private Partnership (PPP). She aims to clarify and disentangle how PPP unfolds in smart city context, in order to enhance the understanding of what a smart city really is and how cross-sector collaboration unfolds. Prior to her PhD at UiS, Xiangyu has studied Finance, International Business & Management with broad international experience.

### Research interests: Innovation, Smart Cities, Private-Public Partnership, digital technology, Urban development

# PhD Projects

## [Applications of artificial intelligence in planning, managing and orchestrating the fifth generation (5G) networks for Smart Cities](https://www.uis.no/employee/ZWJQbWhJUnl4V2tsSTA0TzZEZzE3QQ)

**Ali Gohar, Department of Electrical Engineering and Computer Science**

**Project Description:** Rapid urban growth in recent years has led to initiatives around the world in seeking solutions to make cities more sustainable through technological advances. The Internet of Things (IoT), being a network of physical objects deployed in cities, offers a solution, but its applications demand strict reliability, security and performance requirements for Information and Communication Technologies (ICT). The fifth generation (5G) of mobile networks is expected to be a key enabler and infrastructure provider in the ICT sector. 5G is inherently designed to deliver a wide range of services to meet different IoT application requirements.

However, new challenges arise as 5G is a functionally dynamic, complex, coherent and scalable framework that supports a wide range of evolving services, applications and optimization requirements. One way to address these issues is by integrating artificial intelligence (AI) into 5G networks. The project will explore the potential of AI-based solutions in planning, managing and orchestrating the 5G networks that fulfill the requirements of various communication technologies in building smart city experiences.

**Core Members of Project:**

• Assoc. Prof. Gianfranco Nencioni - Doctoral Supervisor (gianfranco.nencioni@uis.no)

• Prof. Chunming Rong - Doctoral Supervisor (chunming.rong@uis.no)

• Ali Gohar – Doctoral Student (ali.gohar@uis.no)

## [Building Integrated Photovoltaic (BIPV) in dense urban areas: Potential, Challenges, and solutions](https://www.uis.no/employee/NXg4Y3NVR3NXcjdMRkNnSVQvUVh4QQ)

**Hassan Gholami, Department of safety, economics and planning**

**Project Description:** The PHD project deals with the (economic, technical and architectural) feasibility of the BIPV systems in urban areas considering the existed challenges such as shading, reflection, building orientation etc. There are also some experimental case studies linked to this PHD project that the electricity production data and the interaction with the power grid are under monitoring.

The other aim of the PHD project is to monetize or quantify all the benefits from the BIPV systems in urban areas including the social and environmental advantages. Some results have been published and some are under review.

So far from the results it can be said that the BIPV system is significantly much more feasible economically when we consider the environmental and societal benefit of the system. For the next step, the subject which raises the curiosity, is “how much the idea of employing BIPV systems to achieve the concept of zero-energy cities is economically feasible.”

## [Children and a smart sustainable city](https://www.uis.no/employee/SVd5TEhCZTloaUs3aStnOUpBaVlvUQ)

**Johana M. Castilla, Department of early childhood education**

**Project description:** This project aims to explore, to research and develop children’s participation, understanding, competences, perspectives, experiences and opinions through their active involvement in the development of the Stavanger Smart City project and the city’s sustainable development.

In the project, children are involved as central actors and have a peripheral but active participation, particularly in the process of establishing a smart sustainable campus at the University of Stavanger.

Combining the building blocks represented by knowledge, education, technology and sustainability, the research project fills important cognitive, social and humanistic gaps. The gaps arise from the fact that currently, there is a big lack of studies regarding the participation of children in Smart city initiatives. In the creation, implementation and development of a smart and sustainable city, the opinions and experiences of children –the current and future citizens- remains vital.

This project seeks also to produce high-quality research results that can help towards the fulfillment of some of the sustainable goals. Throughout the project, the following outcomes are expected: a) Children from kindergartens and schools will get an initial understanding of the significance of technology and its importance for sustainable solutions. b) A balanced approach to the introduction and use of smart-city technology and digital tools to children will be developed c) Collaboration with other Smart City projects will occur, d) Children from kindergartens and schools that will get an initial understanding of the significance of technology and its importance for meeting sustainable development goals, e) Children, seen as citizens, will participate actively and their opinions and interaction will be taken into account.

This research offers the possibility of carrying longitudinal studies. Methodologically, the project relies on a participatory design, using different theories such as sustainability science, socio-cultural learning and situated learning. Methods like the mosaic approach, participant observation, formal and informal conversations and interviews with children, educators and other key smart city stakeholders are included. Analysis of policy plans or documentation and other relevant theoretical and empirical research will add to the qualitative case studies and formal and informal interviews during the development of the project.

## [What is the point (of reference)? New platforms for improvised music.](https://www.uis.no/article.php?articleID=135526&categoryID=11198)

**Kristoffer Berre Alberts, Department of performing arts**

**Project description:** The starting point for my artistic research is a desire to locate reference points within various music improvisational models such as free jazz and English improvised music from the 1960s. The reference points can be rhythmic figures, melodic and harmonic structures, but also less audible and defined points of reference such as abstract sonic textures, silence, repetition and

form-based structures such as sonic drones and callback to previous musical acts. As practitioners of the models, through collective practice and experience, we have established a foundation of knowledge blocks to deal with and make stylistically correct choices when these reference points arise in the music of the various improvisational models. I want to use ethnomusicologist Bruno Nettl's improvisational theories as a framework for the research. As a solo saxophonist, as a band member of established ensembles and as a curator of new constellations and venues, I have an ambition to use the already established reference points and knowledge blocks to put together new models with defined reference points and continue how we practice and experience improvisational music. One possible outcome would be to utilize knowledge from improvisational processes derived from noise music (focusing on the release Wake up awesome produced by Lee Spencer Yeh). In this less collective model, music can lose its owner by allowing other performers to use and manipulate the already recorded material in addition to new musical constructions using music production and digital software (DAW). By adding elements of this anarchist, digital improvisational process into a more collective improvisational work with performers who have their experience and knowledge blocks derived from improvisational models such as jazz, rock, contemporary music and English improvised music, I see the opportunity to create new platforms for improvised music. In the research I will focus on a breadth of musical models within the improvised music field, and the anarchist approach of music production in noise music. I would like to facilitate an improvisational process, where the improvisational qualities are well present by allowing those involved to use their improvisational knowledge blocks to the full, while at the same time facilitating the ability to manipulate and modify improvisational processes using simple compositional techniques (time marks, tonality, texture notes) and music production (edit and cut in the material). My research question reads: How to facilitate a creative process that enables the processing of improvisational reference points while preserving the qualities of improvised music?

## [Green Infrastructure for livable and sustainable cities](https://www.uis.no/employee/Qm5Fa0hRRFdXVnJaZm0wcmNXRmludw)

**Maria Korkou, Department of safety, economics and planning**

**Project description:** The research project is a collaboration between University of Stavanger (UiS) and Norwegian Institute of Bioeconomy Research (NIBIO). The project study and develop knowledge and methods for a goal-oriented planning and management of urban green areas and this will be based on indicators for assessing the goods and services of the ecosystem. Moreover, tools for analyzing urban planning and management is going to be developed as well as methods to describe multi-functionality, co-benefits and trade-offs across urban typologies and green infrastructures will be investigated. Furthermore, it will be studied how the indicators can be operationalized to monitor and evaluate the quality of urban green areas, as well as to identify current challenges in urban planning and development. In the project, quantitative and qualitative analysis as well as fieldwork will be used. In addition, experimental design and statistical tools as well as Geographic Information System (GIS) will be used for the project.

## [An Intelligent Energy Forecasting System for Cluster of Smart Buildings](https://www.uis.no/employee/cG9tQTM4cSs1QVgvaXFFVlRXc0IwZw)

**Sasanka Niromi Ranasinghe, Department of Electrical Engineering and Computer Science**

**Project Description:** In the last few decades, there have been significant efforts in integrating renewable energy sources (RES) to the power gird. This allows end users to act as both consumers and producers (prosumers) by maximizing their profit while helping to maintain the balance of the grid. Hence, the need for economic and control techniques to manage the flow of the existing electric power systems is essential. Moreover, the accurate and efficient energy forecasting mechanism is more useful to schedule energy exchange between the users and the grid. However, there have been questions raised on how to improve the accuracy of energy forecasting as well as how to perform secure peer-to-peer (P2P) energy trading between the users and the electric grid. Thus, the main objective of this research is to develop an intelligent energy forecasting system by using machine learning (ML) techniques and while incorporating blockchain for secure transactions.

## [Optimal densities to support a more sustainable urban environment](https://www.uis.no/employee/Tmg2aS9zS1hGQzBBbE8zTDRFbTZkUQ)

**Todor Kesarovski, Department of safety, economics and planning**

**Project description:** The idea of an 'optimal densities' threshold is central for the dissertation. It revolves around the possibilities to achieve the benefits of spatial concentration while simultaneously avoiding most of the problems that higher urban densities can foster. In order to research this, different urban systems / services and their performance will be explored in regards to urban densities. Public transport, alongside energy distribution / consumption, waste management, access to social infrastructure and commercial services, has a vital importance for the functioning of any metropolitan area and thus, it is the urban system to be addressed.

What are the optimal urban densities in relation to sustainable development within a medium-size Norwegian city (Stavanger)?

## [Tools to predict/simulate wind behavior in urban environments](https://www.uis.no/employee/S0RKbGpJWHhnQncyZlhidGhLajRVdw)

**Trond-Ola Hågbo, Department of Mechanical and Structural Engineering and Materials Science**

Trond-Ola Hågbo is a Ph.D. Candidate within urban wind simulations and renewable energy at the Department of Mechanical and Structural Engineering and Materials Science. He holds a M.Sc in "Energy, Climate and Environment" from UiT and is one of three Ph.D. candidates working on the Future Energy Hub as of spring 2020. Future Energy Hub is a UiS based project collaborating with local industry partners, other research facilities as well as public institutions. The overall goal of the project is to accelerate the development of greener buildings and districts.

The focus of Trond-Ola's Ph.D. project is to develop efficient tools to predict/simulate wind behavior in urban environments. The improved tools can aid architectures and city planners in making better decisions regarding pedestrian wind comfort. Another utilization is to evaluate the feasibility of potential locations for wind turbines in urban areas.

His research interests concerning smart cities are urban wind simulations and generations of realistic 3D models of urban areas.

**Research interests:** Computational fluid dynamics, Wind engineering, Turbulence modeling, Renewable energy, Urban 3D model generation

## [Intermediation in urban sustainability transitions](https://www.uis.no/employee/dW5ib2tTdWlJdGw1QUZZSVRXYWwvQQ)

**Veronika Budowska, Department of Media and Social Sciences**

**Project description:** The cities have now become key actors on the international agenda for sustainable development. The new wave of ‘government by experiment’ is emerging in order to stimulate rapid progress in urban transitions towards more sustainable modes. Urban experiments take central stage to this actionable form of governance. Such experiments facilitate a process of development of more sustainable forms of socio-technical configuration through emergence of new ideas, practices, expectations, technologies, and social relations. Alignment of these components normally requires a dialog between actors of multiple sectors involved. Intermediaries working between actors have a central role to play in actors’ interaction, joint activities and problem solving. In this project, we focus on the intermediary actors and processes behind urban transitions, such as individual actors (boundary spanners) functioning on micro-level of intermediation, and systematic intermediaries operating on the mezzo-level. We aim to examine practical activities, processes, and structures that can promote strategic alignment and coordination between multiple actors in urban sustainability transitions. Our primary objective is to further develop theoretical insights on intermediation by linking urban planning literature, transition theory and institutional theory. Our secondary objective is to draw policy insights for integrative experimentation, adaptive planning and urban governance. We conduct multiple case studies of urban experimental projects in the municipality of Trondheim, Norway. By deploying non-participatory observations and qualitative analysis, we obtain in-depth insights into how intermediaries function and how intermediation occurs in urban experimentation.

## [Smart Security & System Adaptation in Smart Cities](https://www.uis.no/employee/RVltc0VPbTFidVhKZ0I1WTl4WFUyUQ)

**Viktoria Gierukas, Department of safety, economics and planning**

**Project Description:** This research project will focus on the topic Smart Security and System Adaptation, Interoperability and Flexibility in a context of “Smart City”. Furthermore, I will examine how features of the “smart city” - features that connect people, objects, and infrastructure - can adapt to an increased threat - targeting society, the economy, or infrastructure - thus enabling cities to respond more rapidly, timely and extensively.

There is no literature that have analyzed “smart security” in a smart city concept and how this can prevent or mitigate the impacts of various threats. “Smart security” is mentioned in the literature but it is not defined or explained in any significant detail, which means that the term remains undefined and unrefined. Smart security acknowledges the importance of safety and security, but there is still lack of explanation for which security measures can be implemented in smart cities and what effect this can have on cities and their citizens’ safety.

This project will therefore focus on the term “smart security” and thereby fill the gap in academic knowledge about “smart security” in smart cities. By doing so, I will establish and define “smart security” in a context of smart cities. Further, a focus will be placed on integrated technology systems – CCTV, radio frequency jamming, Geofencing, smart communication etc. - that can make cities or soft targets more resilient against various threats. Nevertheless, it is important to illuminate that these systems provides opportunities and wider implications in surveillance cities that will be address throughout this project. The use of digital systems can help increase efficiency and perhaps make cities more safe and secure, but there are also risks involved in implementing such systems. It will therefore be important to highlight both the advantages and disadvantages such systems can provide for smart cities.

## [Smart City as a Policy: A comparative study focusing on the role of open innovation in smart city projects](https://www.uis.no/employee/OUZYSTlqdFRFb055bGtqN21SSmt4UQ)

**Xiangyu Quan, UiS Business School**

**Project description:** Smart city policy has tremendous impact on shaping future ways of living and improving quality of life. According to Eurostat (2014), more than half of the world’s population lives in urban areas. Despite that urbanization process brings lots of opportunities, the increase of urban population is a challenge for cities all over the world. With the advancement of digital technologies, smart city as a concept was first raised by IBM in 2009. As a relatively novel concept, research on smart city is still in a nascent stage and the level of smart city development varies across cities. Therefore, it is critical to conduct clearly structured research project to access how local context impact the implementation of smart city policy and how to implement smart city policy effectively and efficiently according to different local context and political processes and what are the impacts on regional development and innovation.

The main goal of this proposed research project is to understand how local context and political processes affect smart city policy implementation. The secondary goal is to uncover the role open innovation plays in initiating and implementing smart city policies in different cities.

In the past, there are many researches and case studies on implementation of the smart city concept and best practices in certain regions. From existing studies and researchers, one of the common aims of building smart cities is to increase quality of city life. Broadly speaking, citizens, companies, and governments are all owners and stakeholders of smart cities. In order to create desirable smart cities, citizens, companies, and governments need to work together. Therefore, I assume open innovation model and smart city policy are inextricably linked and the role open innovation plays in smart city projects is worth exploring.

Since many researches on open innovation and smart cities were focusing on single country or single region, my proposed research projects will conduct a comparative case study.

## Designing Digital Intervention: A design thinking approach to inspire change in young people not in employment, education or training

**Ingjerd Jevnaker Strand, Department of social studies**

**Project Description:** This project explores the design and development process of an interactive app teaching growth mindset targeted towards youths not in education, employment or training. The idea is that the app can help speed up youth’s own capacity for change. The app will be designed through a design thinking / human-centered design process where capturing the subjective experiences of the end-users in situ is an essential part of the problem solving process. Artefacts, prototypes and user tests inform the design process and can generate new knowledge about youths and their contexts. The latter has a wider application beyond the design process of the app. Thus, this PhD-study uses design in two distinct ways, it is doing “design as part of doing research”, and doing “research through design”, i.e. using designed objects and the design process to generate knowledge about people and their contexts.