



GIScience-Colloquium (GIS/GIVA/GCO)

Programme Spring Semester 2024

Tuesday 16:15



9 April | Room Y25 H-79

Investigating sustainable mobility and urban development with big data and open source tools

Dr Henrikki Tenkanen

Assistant Professor of Geoinformation Technology

Department of Built Environment

Aalto University, Finland



30 April | Room Y25 H-79

Modelling of landscape aesthetic values in mountain regions

Prof. Dr. Uta Schirpke

Professor of Physical Geography and Land-Atmosphere Coupling

LMU, Munich, Germany



21 May | Room Y25 H-79

Immersive Digital Twins: Transdisciplinary Perspectives

Prof. Dr Alexander Klippel

Professor of Laboratory of Geoinformation Science and Remote Sensing

University & Research Wageningen,

The Netherlands



28 May | Room Y25 H-79

Empowering Communities: Unveiling the Potential of Place-Based Citizen Science

Dr. Ekaterina Egorova

Geographic Citizen Science Researcher, Faculty of Geoinformation Science and Earth Observation

University of Twente, The Netherlands



TUE 9 April at 16:15 | Room Y25 H-79

Dr Henrikki Tenkanen

Investigating sustainable mobility and urban development with big data and open source tools

Abstract

In this presentation, I will give an overview of our research at the intersection of GIScience, urban analytics and sustainable mobility.

I will give particular attention to projects related to:

- 1) quantification of transport related carbon emissions in the Nordics at high spatial and temporal resolutions using big mobility data and computational models; and
- 2) socioeconomic and spatial inequalities in access to opportunities at national level in Finland with high spatial resolution; and
- 3) the interplay between urban planning, consumption and carbon emissions mixing various geospatial data sources and survey data.

At the end, I will discuss some of the advantages and limitations of these tools and models based on interviews conducted with Finnish planners, reflecting on new research avenues for using spatial data science for sustainable and inclusive cities.

Bio

Henrikki Tenkanen is a geographer and Assistant Professor of Geoinformation Technology at Aalto University. At Aalto, he leads the [GIST Lab](#) which is an interdisciplinary research group focusing on harnessing GIScience methods and modelling to better understand and address sustainability challenges. More specifically, the team focuses on big data analytics, spatial accessibility modelling, mobility research and urban planning. Henrikki is enthusiastic about open science and education and has contributed e.g. to the UNESCO's Recommendation on Open Science. He is an author of various [open online courses](#) targeted for geographers, as well as a forthcoming book [Introduction to Python for Geographic Data Analysis](#). Henrikki also actively contributes to Python's geospatial ecosystem by being the maintainer of [pyrosm](#) and [r5py](#) libraries and a contributor to geopandas and OSMnx.





TUE 30 April at 16:15 | Room Y25 H-79

Prof. Dr Uta Schirpke

Modelling of landscape aesthetic values in mountain regions

Abstract

Mountain regions are highly appreciated for their appealing landscapes contributing to human well-being in terms of aesthetic and recreational experiences. To maintain such landscapes in the face of increasing global change pressures, spatially explicit information is needed to support landscape management and planning. However, quantifying and mapping landscape aesthetic values remains highly challenging due to their subjectivity. Here, a spatial modelling approach relating landscape characteristics to people's preferences via a regression model is presented. Landscape preferences were gathered through surveys using photo-based questionnaires with panoramic pictures representing major landscape types of the European Alps such as alpine grassland, forest, agriculturally used landscapes, and urbanised landscapes. Landscape indicators were calculated based on geo-data for each photo location accounting for topography and distance to the photo point. This modelling approach allows the estimation of landscape aesthetic values in spatial and qualitative terms for most viewpoints in the European Alps. The model can be applied for analysing impacts of landscape changes on aesthetic landscape values, and the resulting maps can be used as a discussion basis supporting the decision-making process.

Bio

Uta Schirpke is a senior researcher at the Institute for Alpine Environment at Eurac Research in Bozen/Bolzano (Italy). She has a background in physical geography (LMU Munich) and landscape ecology (PhD and habilitation at the University Innsbruck, Austria). She aims at assessing human-nature relationships and interactions focusing on mountain socio-ecological systems. She has strong expertise in modelling ecosystem services, analysing spatial patterns, and assessing the effects of global change on ecosystem services bridging socioeconomic and ecological sciences.





TUE 21 May at 16:15 | Room Y25 H-79

Prof. Dr Alexander Klippel

Immersive Digital Twins: Transdisciplinary Perspectives

Abstract

One omnipresent solution to societal and environmental challenges of the anthropocene are digital twins. A digital twin is a computer program that allows for simulating processes of systems, ideally in real-time, such as traffic in a city or on the North Sea. Through this simulation, researchers, stakeholder or the interested public hope to gain insights into the system and therefore make better decisions. Digital twins have gained wide-spread attention from industry, government, research, and education and they are ubiquitous in all academic disciplines. Like all models, though, digital twins can be rather abstract. Not everyone will immediately understand them. Especially in situations where we are dealing with diverse stakeholders, making digital twins accessible and useful is essential to unfold their full potential. A team at Wageningen University and Research is addressing these challenges by combining digital twins with developments to create scalable and open-access solutions for eXtended Realities. The fusion of these technologies we refer to as *immersive digital twins*. In this presentation we will discuss the geo-scientific foundations of the approach and provide ample examples of how immersive digital twins might support sustainable transitions addressing societal and planetary challenges.

Bio

Alexander Klippel is Professor of Immersive Experiences at Wageningen University and Research, with a focus on spatial data science and spatial cognition. His research and education are grounded in an understanding that humans are spatial beings and that our interactions and relations, communication, all our activities, learning and understanding have a spatial component. Immersive technologies provide an opportunity to connect human spatiality with a spatial medium and the potential is only slowly unfolding. In his research, Alexander is laying the scientific foundations of how immersive technologies, serious games, and the spatial sciences can address societal challenges and aid in sustainable transitions. Before joining Wageningen, Alexander was the inaugural director of Penn State's Center for Immersive experiences and a professor in their famous Geography department. He was a post doc at the University of Melbourne, Australia, and received a Ph.D. from Bremen University, Germany, in a German Science Foundation funded "Sonderforschungsbereich" with a focus on Spatial Cognition. He likes to think of himself as a transdisciplinary researcher. He also has the usual academic credentials with plenty of publications, fellowships, best paper awards and funding from agencies from three continents.





TUE 28 MAY at 16:15 | Room Y25 H-79

Dr Ekaterina Egorova

Empowering Communities: Unveiling the Potential of Place-Based Citizen Science

Abstract

Geographic citizen science, representing public involvement in scientific projects with an explicit geospatial component, empowers communities to raise and solve local environmental issues ranging from disaster response to noise reduction. With the growing availability of geospatial tools and applications, the amount of such projects is steadily increasing. However, they still do not engage evenly across all sectors of the society, often leaving aside those whose lives could benefit most from such activities. In this talk, I will describe a series of citizen science projects with newly arrived refugee youth. I will outline essential project design considerations, and will detail activities and tools employed, followed by a discussion of scientific outputs and multi-faceted impacts that these projects generated. I will demonstrate that citizen science with this community not only provides valuable insights into the perception and use of urban space by newly arrived refugee youth, but also facilitates, shapes, and mediates participants' relation with place, contributing to their place discovery and place bonding.

Bio

Dr. Ekaterina Egorova holds a PhD in Geographic Information Science from the University of Zurich, Switzerland, where she specialized in operationalization and extraction of spatial concepts from text, such as social media and digitized corpora. Her PhD was followed by an SNSF-funded project where she further explored aspects of spatial cognition and navigation, but also place facets such as affordances and the sense of place through the prism of user-generated content in New Zealand. She currently holds a position of a Geographic Citizen Science Researcher at the Faculty of Geo-Information and Earth Observation (ITC), University of Twente, The Netherlands, where she works in close collaboration with local communities on topics ranging from energy transition to urban green infrastructure and well-being.

