

UBISS 2024

12TH INTERNATIONAL UBI SUMMER SCHOOL

JUNE 10-15, 2024

OULU, FINLAND



[HTTPS://UBICOMP.OULU.FI/UBISS2024](https://ubicomp oulu fi/ubiss2024)



PROGRAM AT A GLANCE

Monday June 10	8:30	Registration and UBI Café Open Location: University of Oulu, Linnanmaa campus, Erkki Koiso-kanttilan katu 3, door E
	9:00-12:00	INTERNATIONAL UBICOMP SEMINAR 2024 Location: University of Oulu, Linnanmaa campus, L10
	12:00-13:00	Lunch in Restaurant Kastari
	13:15-14:15	Campus Tour XR Lab & EEG Lab ; iEDGE Lab ; Smart Campus Oulu ; Super Fab Lab Oulu
	14:30-15:45	Summer School Kick Off Location: University of Oulu, Linnanmaa campus, L10
	16:00-18:00	Workshops Kick Off Location: University of Oulu, Linnanmaa campus, workshops' forts
	18:15-21:30	Get Together Party Location: University of Oulu, Linnanmaa campus, Tellus At 21:30 bus from Linnanmaa campus to Nallikari and downtown
Tuesday June 11	10:00-18:00	Hard work in the workshops
Wednesday June 12	10:00-18:00	Hard work in the workshops
	19:00-22:00	Dinner Boat Cruise aboard M/S Casandra Location: Marketplace Pier At 18:15 bus from Linnanmaa campus to marketplace via Nallikari At 18:45 bus from Linnanmaa campus to marketplace At 22:00 and 24:00 bus from marketplace to Nallikari and Linnanmaa campus
Thursday June 13	10:00-18:00	Hard work in the workshops
Friday June 14	10:00-18:00	Hard work in the workshops
Saturday June 15	9:00-12:00	Final Exam Location: University of Oulu, Linnanmaa campus, L10
	12:00-13:00	Lunch at UBI Café
	13:15-18:25	Result Seminar Location: University of Oulu, Linnanmaa campus, L2
	18:30-18:50	Debriefing in Workshops Location: University of Oulu, Linnanmaa campus, workshops' forts At 19:00 bus from Linnanmaa campus to Nallikari
	20:30	School Dinner Location: Johteenpooki, Kansankentäntie 11 Bus to Johteenpooki departs from Linnanmaa at 20:00 and from Nallikari at 20:15

INTERNATIONAL UBICOMP SEMINAR 2024

Date	Monday, June 10, 2024
Time	9:00 – 12:00
Location	University of Oulu, Linnanmaa campus, lecture hall L10
Web	http://ubicomp oulu.fi/international-ubicomp-seminar-2024/
Program	
9:00	Opening words
9:10	UBIQUITOUS ARTIFICIAL INTELLIGENCE: MACHINE LEARNING ON IOT DEVICES Professor Albrecht Schmidt, LMU Munich, Germany
9:30	CARE-FULL! MORE-THAN-HUMAN URBAN FUTURES Professor Marcus Foth, Queensland University of Technology, Australia
9:50	DESIGNING TANGIBLE AI INTERACTIONS Professor Kaisa Väänänen, Tampere University, Finland
10:10	VIRTUALLY REAL? THE ART AND SCIENCE OF DESIGNING IMPACTFUL (OR EVEN TRANSFORMATIVE?) VIRTUAL EXPERIENCES Professor Bernhard Riecke, Simon Fraser University, Canada
10:30	Coffee service
10:50	UBICOMP RESEARCH REPORT Professor Timo Ojala, University of Oulu, Center for Ubiquitous Computing (UBICOMP)
11:10	Q&A WITH THE SPEAKERS
11:50	Closing words



Q&A with the speakers ongoing in the International UBICOMP Seminar 2010.

Panelists from left: Anind Dey (Carnegie Mellon University, USA), Marcus Foth (Queensland University of Technology, Australia), Zach Shelby (Sensinode, Finland), Jürgen Scheible (Aalto University, Finland), Vassilis Kostakos (University of Madeira, Portugal), Adam Greenfield (Urbanscale, USA), Mikael Wiberg (Uppsala University, Sweden). Moderator: Timo Ojala (University of Oulu, Finland).

UBISS CONCEPT

The purpose of the annual international UBI Summer Schools (UBISS) is to provide researchers, students, and industry and public sector professionals with an opportunity to gain hands on experience and insight on selected topics under the tutelage of distinguished experts. UBISS typically comprises of 3-6 parallel 6-day “hands on” workshops where the instructor(s) first provide a theoretical framing of the topic of the workshop and then supervise students’ group projects whose outcome is presented in the result seminar in the last day. Thus, the instructor(s) work intimately with their students throughout the week, in contrast to many other summer/winter schools, where a particular instructor is available only for a limited amount of time in form of lectures or a tutorial. To stimulate interaction between attendees, UBISS has a rich social program in form of get together party, dinner boat cruise and school dinner.

Students are selected through an open international call so that all prospective students submit an online application where they identify their preferred workshop(s) and justify why they should be accepted to a particular workshop. The instructor(s) select from the pool of applications students who then confirm their seat through registration. The instructor(s) prep their students with a reading package studied in advance and pre summer school assignments. Students completing their project and passing the written exam given in the last day of the summer school will be awarded 5 ECTS credits towards their studies, subject to the approval by a student’s home institution. The design and implementation of future UBISS is informed by the feedback that students provide in a comprehensive post summer school questionnaire.

The first UBISS was organized in summer 2010, to provide the prospective participants of the 1st International UBI Challenge 2011 with an opportunity to gain hands-on experience on the urban computing infrastructure in Oulu that was utilized in the UBI Challenge. Prof. Albrecht Schmidt (back then in University of Stuttgart, now in LMU Munich) proposed arranging a summer school for this purpose. The first UBISS enrolled 72 participants from 20 countries in six parallel workshops. The excellent feedback from both instructors and students participating in the inaugural and subsequent summer schools has convinced us to host UBISS as an annual tradition, with a highly multidisciplinary collection of workshops over the years. So far, about 700 students from all over the world have attended UBISS, many of them multiple times. Dr. Eduardo Velloso became the first former UBISS student to return as a ‘junior’ co-instructor to Prof. Hans Gellersen in UBISS 2016, incarnating the endless cycle of academics passing on their knowledge to future generations. Further former UBISS students, Dr. Denzil Ferreira and Dr. Simo Hosio returned as ‘junior’ co-instructors in UBISS 2018, and Dr. Sven Mayer in UBISS 2024.



UBISS 2023 enrolled 63 students from 10 countries in three parallel workshops

WORKSHOPS

A

UBIQUITOUS ARTIFICIAL INTELLIGENCE: MACHINE LEARNING ON IOT DEVICES



Prof. Albrecht Schmidt
LMU Munich
Germany

Assistant Prof. Sven Mayer
LMU Munich
Germany



B

CARE-FULL! MORE-THAN-HUMAN URBAN FUTURES



Prof. Marcus Foth
QUT
Australia

Associate Prof. Jaz Hee-jeong Choi
Amsterdam University of Applied Sciences
Netherlands



Dr. Ekaterina Gilman
University of Oulu
Finland



C

DESIGNING TANGIBLE AI INTERACTIONS



Prof. Kaisa Väänänen
Tampere University
Finland

Prof. Jonna Häkkinä
University of Oulu
Finland



Dr. Ashley Colley
University of Lapland
Finland



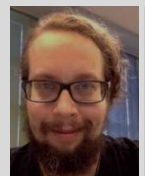
D

VIRTUALLY REAL? THE ART AND SCIENCE OF DESIGNING IMPACTFUL (OR EVEN TRANSFORMATIVE?) VIRTUAL EXPERIENCES



Prof. Bernhard Riecke
Simon Fraser University
Canada

Dr. Matti Pouke
University of Oulu
Finland



Dr. Paula Alavesä
University of Oulu
Finland



WORKSHOP A

UBIQUITOUS ARTIFICIAL INTELLIGENCE: MACHINE LEARNING ON IOT DEVICES

Instructors: Professor Albrecht Schmidt, LMU Munich, Germany
 Assistant Professor Sven Mayer, LMU Munich, Germany

TA: Dr. Abhishek Kumar, University of Oulu

Liaison student: Shanaka Badde Liyanage Don, University of Oulu, shanaka.baddeliyanagedon@student.oulu.fi

Fort: TS101

SCHEDULE

DATE	TIME	TOPIC	LOCATION
Monday June 10	9:00-12:00	International UBICOMP Seminar 2024	L10
	12:00-13:00	Lunch	Kastari
	13:15-14:15	Campus Tour	
	14:30-15:45	Summer School Kick Off	L10
	16:00-16:15	Introductions	TS101
	16:15-17:15	Lecture: Creating Interactive Smart Objects and Environments (joint session with workshop C)	TS101
	17:15-17:45	Hands-on: Components, Tools, and Development Environments	TS101
	17:45-18:00	Lecture: Preview of the Tasks Ahead	TS101
	18:15-21:30	Get Together Party	Tellus
Tuesday June 11	10:00-10:45	Lecture: ML Development Cycle	TS101
	10:45-11:00	Lecture: Challenges of AI/ML on Edge Devices and IoT	TS101
	11:00-12:00	Hands-on: Project 1.1	TS101
	12:00-13:00	Lunch	Kastari
	13:00-14:00	Hands-on: Project 1.2	TS101
	14:00-14:30	Lecture: Rule-based Systems	TS101
	14:30-15:30	Hands-on: Project 1.3	TS101
	15:30-16:00	Coffee break	UBI Café
	16:00-16:30	Hands-on: Demo session 1	TS101
	16:30-17:45	Hands-on: Project 1.4	TS101
17:45-18:00	Hands-on: Presentations of selected results from Project 1.4	TS101	
Wednesday June 12	10:00-12:00	Lecture: Introduction to Jupyter Notebooks	TS101
	12:00-13:00	Lunch	Kastari
	13:00-15:00	Hands-on: Installing Jupyter Notebook for Micropython	TS101
	15:00-15:30	Hands-on: Project specification, Ideation on Project ideas	TS101
	15:30-16:00	Coffee break	UBI Café
	16:00-16:30	Hands-on: Presentation of project ideas, group forming	TS101
	16:30-17:00	Lecture: Introduction to ML Libraries	TS101
	17:00-18:00	Hands-on: Implementing a basic model using everywhereML	TS101
	19:00-22:00	Dinner Boat Cruise	Marketplace Pier
Thursday June 13	10:00-10:45	Hands-on: Definition of projects	TS101
	10:45-11:15	Hands-on: Project presentations	TS101
	11:15-12:00	Hands-on: Project work	TS101
	12:00-13:00	Lunch	Kastari
	13:00-15:00	Hands-on: Project work	TS101
	15:00-15:30	Hands-on: Stand-up meeting on project progress	TS101
	15:30-16:00	Coffee break	UBI Café
	16:00-17:30	Hands-on: Project work	TS101
	17:30-18:00	Lecture: How to Evaluate ML Solutions	TS101

Friday June 14	10:00-10:30	Hands-on: Stand-up meeting — project challenges and solutions	TS101
	10:20-11:30	Hands-on: Project work	TS101
	11:30-12:00	Lecture: Pitfalls and Challenges in Developing ML/AI for IoT	TS101
	12:00-13:00	Lunch	Kastari
	13:00-15:30	Hands-on: Project work	TS101
	15:30-16:00	Coffee break	UBI Café
	16:00-16:30	Lecture: Testing and Reporting ML Performance	TS101
	16:30-17:30	Hands-on: Testing of prototype performance	TS101
	17:30-18:00	Hands-on: Open issues for presentation in result seminar, feedback	TS101
Saturday June 15	9:00-12:00	Final Exam	L10
	12:00-13:00	Lunch	Kastari
	13:15-18:25	Result Seminar	L2
	18:30-18:50	Debriefing	TS101
	20:30	School Dinner	Johteenpooki

INSTRUCTORS



Albrecht Schmidt is a full professor of computer science at Ludwig-Maximilians-Universität (LMU) in Munich. His research and teaching interests include intelligent user interfaces, interactive systems, ubiquitous computing, multimodal user interfaces, digital media technologies, and media informatics. He studied computer science at the University of Ulm and Manchester Metropolitan University. In 2003, he earned a PhD in computer science from Lancaster University with a focus on “Ubiquitous Computing – Computing in Context.” In the past 25 years, he has published more than 400 papers, with over 29,000 citations of his work. Over 30 students have completed their PhD under his supervision and mentorship, and many of them are now professors themselves. Albrecht served as a technical program co-chair for ACM CHI in 2014, as a conference co-chair for ACM UIST in 2018, and as conference co-chair for ACM CHI 2023 in Hamburg. He is also a member of the editorial board for the ACM TOCHI journal and co-founder of the ACM conferences TEI and Automotive User Interfaces. In 2018, he was inducted into the ACM SIGCHI Academy and, in 2020, he was elected to the German academy of science, Leopoldina. Furthermore, he co-founded an IoT company in 2018 and is enthusiastic about exploring how AI and ML are transforming software and systems engineering.



Sven Mayer is an assistant professor (Jun.-Prof.) of computer science at LMU Munich (Germany). His research sits at the intersection between Human-Computer Interaction and Artificial Intelligence, where he focuses on the next generation of computing systems. He uses artificial intelligence to design, build, and evaluate future human-centered interfaces. In particular, he envisions enabling humans to outperform their performance in collaboration with the machine. His research directly translates into this service work, for instance, in 2023, he served as the General Chair of the Conference on Hybrid Human-Artificial Intelligence. He is also a member of the editorial board for the ACM TOCHI journal and he is a ACM CHI Steering Committee member. He focuses on areas such as augmented and virtual reality, mobile scenarios, and robotics. Before his faculty appointment at LMU in 2020, he was a postdoctoral researcher at Carnegie Mellon University (2019 – 2020) and received his doctoral degree in 2019 at the University of Stuttgart.

SYNOPSIS

Artificial intelligence (AI), generative models (GenAI), and machine learning (ML) are becoming ubiquitous! These technologies are at the core of intelligent systems and are required to implement intelligent environments, autonomous robots and drones, and smart mobile devices. In this workshop, we focus on the Question: How can we implement intelligent functions on small networked devices? We will cover how to design the system architecture, ways to acquire and process data with sensors, the choice of ML algorithms, the design of deep learning architectures, how to train systems, and how to deploy models. In particular, we will teach how to implement technical solutions and what trade-offs need to be navigated.

Topics to be covered include:

- Overview of AI and ML technologies for use on IoT devices,
- System architectures for networked embedded intelligent systems,
- Data acquisition and data processing for ML on mobile and embedded systems,
- Deep learning architectures for resource-constrained devices,
- Training ML models for and on mobile and embedded devices,
- Deploying models on IoT devices to implement smart functions.

We will look into the technical aspects of implementing such systems, covering:

- Calling APIs in the cloud (e.g. Open AIs APIs or Microsoft's Azure cognitive services),
- Deploying models on a server and connecting remotely,
- Running models on the edge devices,
- Training (very small) models on embedded processors (e.g. TinyML, TensorFlow_lite),
- Available libraries for resource-constrained devices.

In practical exercises and tutorials, we will look at different ways to use Machine Learning (ML) on embedded processors and mobile devices. In particular, we will use Python and Micro-Python.

Each student will build an embedded device that reacts intelligently to its environment and to interactions. The system will be centered on an 'Arduino Nano RP2040 Connect' or a Raspberry Pi. Students will add sensors and actuators. Ideas include a device that makes a happy sound when it meets a person it has seen before, a ball that lights up when you move it very gently in a secret pattern, and a smart tag that learns its usual environment and will send a message when it is taken away. Every participant decides on their connected devices and defines their project in dialog with the lecturers.

Students will learn how to design, implement, and test intelligent IoT systems using ML. This includes:

- Choosing an embedded platform for an intelligent system,
- Defining a system architecture for an intelligent system based on given requirements,
- Designing and conducting sensor-based data acquisition for IoT devices for ML,
- Implementing an ML model and running it on an embedded device using Python,
- An overview of different ML libraries and frameworks,
- Understanding trade-offs in the design of resource-constrained ML systems.

Our primary target audience are doctoral students and master students with a background in computer science, data science or related subjects. Basic skills in programming are required to participate in this workshop. BSc students, postdocs, and professionals wanting to deepen their skills and knowledge in ML and intelligent systems are also welcome.



Albrecht Schmidt's workshop in UBISS 2013

STUDENTS

First name	Last name	Organization	Country
Saim	--	University of Oulu	Finland
Ijaz	Ahmad	University of Oulu	Finland
Toseef	Ahmed	University of Oulu	Finland
Muhammad Talha	Arshad	University of Oulu	Finland
Mohammad	Farhoudi	University of Oulu	Finland
Felix	Heisel	TU Bergakademie Freiberg	Germany
Md Mobusshar	Islam	University of Oulu	Finland
Raisul	Islam	University of Oulu	Finland
Samira	Kamali Poorazad	University of Oulu	Finland
Mohammad	Khalili	University of Oulu	Finland
Ijlal Hussain	Khan	University of Oulu	Finland
Ali	Mahmoudi	Eindhoven University of Technology	Netherlands
Huong	Nguyen	University of Oulu	Finland
Shanaka	Badde Liyanage Don	University of Oulu	Finland
Sonali	Prasadika	University of Oulu	Finland
Alexandru Miron	Rancea	Technical University of Cluj-Napoca	Romania
Shafin	Salim	University of Oulu	Finland
Thushan	Sivalingam	University of Oulu	Finland
Songyan	Teng	University of Melbourne	Australia
Romain	Toebosch	Univeristy of Luxembourg	Luxembourg
Gabriella	Trasciatti	Sapienza University of Rome	Italy
Shenxiu	Wu	TU Delft	Netherlands
Jingyao	Zheng	Hong Kong Polytechnic University	China
Tim	Zindulka	University of Bayreuth	Germany



Marcus Foth's, Jaz Choi's and Patrik Hoffman's workshop in the inaugural UBISS 2010

WORKSHOP B

CARE-FULL! MORE-THAN-HUMAN URBAN FUTURES

Instructors: Professor Marcus Foth, Queensland University of Technology, Australia
Associate Professor Jaz Choi, Amsterdam University of Applied Sciences, Netherlands
Dr. Ekaterina Gilman, University of Oulu

Liaison student: Amirhossein Ghaffari, University of Oulu, amirhossein.ghaffari@oulu.fi

Fort: TS127

SCHEDULE

DATE	TIME	TOPIC	LOCATION
Monday June 10	9:00-12:00	International UBICOMP Seminar 2024	L10
	12:00-13:00	Lunch	Kastari
	13:15-14:15	Campus Tour	-
	14:30-15:45	Summer School Kick Off	L10
	16:00-18:00	Welcome, introductions, housekeeping Pre-Summer School Assignment: 2 min presso per student	TS127
	18:15-21:30	Get Together Party	Tellus
Tuesday June 11	10:00-12:30	Lectorial #1: Technology is the least of our concerns: Three provocations in response to the climate emergency	TS127
	12:30-13:30	Lunch	Kastari
	13:30-15:30	Key themes & challenges from the readings Group formation	TS127
	15:30-16:00	Afternoon tea	UBI Café
	16:00-18:00	Groups select project challenges	TS127
Wednesday June 12	10:00-12:30	Lectorial #2: Care-full Design: More-than-Human Co-creation	TS127
	12:30-13:30	Lunch	Kastari
	13:30-15:30	Dérive Lectorial #2 continues	TS127
	15:30-16:00	Afternoon tea	UBI Café
	16:00-18:00	Group work	TS127
	19:00-22:00	Dinner Boat Cruise	Marketplace Pier
Thursday June 13	10:00-12:30	Lectorial #3: Data in Smart Cities	TS127
	12:30-13:30	Lunch	Kastari
	13:30-15:30	Excursion: BusinessAsema	
	15:30-16:00	Afternoon tea	UBI Café
	16:00-18:00	Group work	TS127
Friday June 14	10:00-12:30	Group work presentations practice run	TS127
	12:30-13:30	Lunch	Kastari
	13:30-15:30	Preparing for final exam and presentation in result seminar	TS127
	15:30-16:00	Afternoon tea	UBI Café
	16:00-17:00	Preparing for final exam and presentation in result seminar	TS127
	17:00-18:00	Final plenary discussion and future prospects	TS127
Saturday June 15	9:00-12:00	Final Exam	L10
	12:00-13:00	Lunch	Kastari
	13:15-18:25	Result Seminar	L2
	18:30-18:50	Debriefing	TS127
	20:30	School Dinner	Johteenpooki

INSTRUCTORS



Marcus Foth is a Professor of Urban Informatics in the School of Design and a Chief Investigator in the QUT Digital Media Research Centre (DMRC), Faculty of Creative Industries, Education, and Social Justice, Queensland University of Technology, Brisbane, Australia. For more than two decades, Marcus has led ubiquitous computing and interaction design research into interactive digital media, screen, mobile and smart city applications. Marcus founded the Urban Informatics Research Lab in 2006 and the QUT Design Lab in 2016. He is a member of the QUT More-than-Human Futures research group. Marcus has published more than 280 peer-reviewed publications. He is a Fellow of the Australian Computer Society and the Queensland Academy of Arts and Sciences, a Distinguished Member of the international Association for Computing Machinery (ACM), and currently serves on Australia's national College of Experts. In his spare time Marcus is a womassador and hobby beekeeper.



Jaz Hee-jeong Choi is an Associate Professor in Civic Interaction Design at the Amsterdam University of Applied Sciences. Their transdisciplinary research and practise situate 'care' at the core of transformational encounters in different settings ranging from cities as complex cyberphysical networks to forests as moving creatures. They build on this to explore how radical transformation can materialise care-fully through creative-critical engagements. Jaz's work is often experimental, multisensory, playful, and participatory, and starts from the margins to understand and create just futures. Their current research, practice, and engagement focus on the dynamics of creative practice as feral care: they explore 1) its potential to arouse societal transformation in different cultural and more-than-human contexts, and 2) experimental and co-creative ways to form relational spaces to make sense of indeterminacy, plurality, and entanglements towards change. Jaz loves spicy food.



Ekaterina Gilman, D.Sc. (Tech.), is a postdoctoral researcher supported by the Academy of Finland at the Center for Ubiquitous Computing. Her research interests include data analytics, context modelling and reasoning, and machine learning in ubiquitous computing, IoT, and data-intensive systems. She has also worked as a visiting researcher in Northern Finland Biobank Borealis and Centre for Health and Technology, Oulu, Finland. She has been involved as PI and researcher in several research projects funded by European Regional Development Fund, Business Finland, Academy of Finland, EU Horizon 2020 research and innovation programme. Ekaterina actively participates in the research community as a reviewer for international journals, organiser and program committee member of scientific workshops and conferences. Ekaterina likes playing piano.

SYNOPSIS

With the increasing awareness of the detrimental effects of anthropocentrism, interests in how we might understand and engage with the more-than-human have been growing substantially across various fields of research and practice, including interaction design. This workshop will explore different approaches to interaction design that can help us move away from human-centric views particularly evident in the current smart cities and urban informatics discourses. Recognising our complex entanglements with planetary ecosystems and in search of justice for humans and other-than-humans, we will work with and across diverse disciplines such as HCI, STS, geography, critical data studies, planning, and design, to reconsider concepts and practices that can help us re-imagine more-than-human futures for urban environments.

Topics to be covered will include:

- Critiques of and alternative approaches to smart cities, digital twins, urban informatics;
- More-than-human design;
- Care and co-creation;
- Multispecies justice.

The workshop will include lectorials, hands-on studio sessions, and a *dérive* (drift) outside, in parallel with the development of group projects, and will end with final presentations. Participants will engage in a hands-on project that leads to tangible results, aligning with the workshop’s focus on co-creative practices for cohabitation and more-than-human urban futures. Students will form small interdisciplinary teams and work on questions and challenges related to the workshop’s theme. Examples of possible project directions include but certainly not limited to the following:

- Ways to listen to an/or amplify the different voices of urban forests;
- How matters of inclusivity and bias can be addressed in urban governance context, through the lens of care;
- Designing a digital twin for an other-than-human habitat such as a beehive, considering ecological and technological interplay;
- Creative exploration of human and multispecies subjectivities in relation to generative Artificial Intelligence;
- Augmented or immersive media that can help draw attention to the – often hidden – human-induced damages and threats to multispecies lives in urban environments.

Prospective learning outcomes include:

- Understanding of core concepts, theories and approaches related to more-than-human design;
- Practical experience through co-creative experimentation with these concepts;
- Collaborating with and receiving feedback from participants with diverse professional and cultural knowledge, practices, and experiences;
- Ability to critically engage with more-than-human perspectives with a focus on urban interaction design.

Preferred student profile:

- Interest or experience in design, transdisciplinary, and creative practice-based research;
- A passion for exploring new and radical approaches to urban challenges;
- Optional: Programming skills for those engaging in any technical prototype development.

STUDENTS

First name	Last name	Organization	Country
Muhammad	Ahmed	University of Oulu	Finland
Najme	Babai	University of Oulu	Finland
Arianna	Bellantuono	Politecnico di Milano	Italy
Angelica	Caiza	University of Groningen	Netherlands
Penelope	Corinaldesi	London School of Economics and Political Science	UK
Maha Ezzat	Eldamnhory	University of Oulu	Finland
Amirhossein	Ghaffari	University of Oulu	Finland
Medhasree	Ghosh	Indian Institute of Technology Patna	India
Sehrish	Khan	University of Oulu	Finland
Nazmul	Mahmud	University of Oulu	Finland
Siiri	Paananen	University of Lapland	Finland
Ville	Paananen	University of Oulu	Finland
Elise	Poussot	London School of Economics and Political Science	UK
Priyanka	Sebastian	University of Oulu	Finland
Ruhamah	Thejus	University of St Andrews	UK
Gianni	Tumedei	University of Bologna	Italy

WORKSHOP C

DESIGNING TANGIBLE AI INTERACTIONS

Instructors: Professor Kaisa Väänänen, Tampere University, Finland
 Professor Jonna Häkkinä, University of Lapland, Finland
 Dr. Ashley Colley, University of Lapland, Finland

Liaison student: Prasasthy Balasubramanian, University of Oulu, prasasthy.balasubramanian@oulu.fi

Fort: TS128

SCHEDULE

DATE	TIME	TOPIC	LOCATION
Monday June 10	9:00-12:00	International UBICOMP Seminar 2024	L10
	12:00-13:00	Lunch	Kastari
	13:15-14:15	Campus Tour	-
	14:30-15:45	Summer School Kick Off	L10
	16:00-18:00	Overview of the workshop's goals and the week's programme Lecture: Creating Interactive Smart Objects and Environments (joint session with workshop A) Getting to know the people	TS128 & TS101
	18:15-21:30	Get Together Party	Tellus
Tuesday June 11	10:00-12:30	Tangible AI group task Lecture 1: Human-centered AI Lecture 2: Tangible interaction Lecture 3: Tangible AI & XAI	TS128
	12:30-13:30	Lunch	Kastari
	13:30-16:00	Lecture 4: HCD methods & design fictions Group formation Brainstorming	TS128
	16:00-18:00	Groupwork: Ideation in groups	TS128
Wednesday June 12	10:00-12:30	Lecture 5: AI apps and socio-technical system design Lecture 6: Prototyping with tangibles & AI	TS128
	12:30-13:30	Lunch	Kastari
	13:30-16:00	Groupwork	TS128
	16:00-18:00	Groupwork: Presentations & critique, planning user study, sparring	TS128
	19:00-22:00	Dinner Boat Cruise	Marketplace Pier
Thursday June 13	10:00-12:30	Groupwork: Fabrication & construction, sparring sessions, user study	TS128
	12:30-13:30	Lunch	Kastari
	13:30-16:00	Groupwork: Tangible prototyping & construction, user study	TS128
	16:00-18:00	Groupwork: Tangible prototyping & construction, plan video, status reports and feedback	TS128
Friday June 14	10:00-12:30	Groupwork: Checkpoint, video scripting & shooting	TS128
	12:30-13:30	Lunch	Kastari
	13:30-16:00	Groupwork: Finalize prototype & video	TS128
	16:00-18:00	Groupwork: Prepare presentation, sparring, finalize presentation	TS128
Saturday June 15	9:00-12:00	Final Exam	L10
	12:00-13:00	Lunch	UBI Café
	13:15-18:25	Result Seminar	L2
	18:30-18:50	Debriefing	TS128
	20:30	School Dinner	Johteenpooki

INSTRUCTORS



Kaisa Väänänen is a full professor of user experience (Human-Computer Interaction, software engineering) in Tampere University, Finland. Kaisa leads the research group of Human-Centered Technology (IHTE) in the unit of Computing Sciences. She has extensive teaching and supervision experience as well as leadership of study programmes. Kaisa has 25 years of experience in research related to human-computer interaction both in university and industry. In 1995-2004, she worked at Nokia Inc, in leading positions of user needs research and strategic consumer insights. Kaisa's research interests cover user experience and human-centered design, with emphasis on design research of digital services for advancing sustainability and human-centered AI. Kaisa is an author of 180+ peer-reviewed academic publications. She is very active in the international research community, and frequently takes part in organizing conferences related to user experience and human-computer interaction, such as the flagship conference of Human-Computer Interaction, ACM CHI 2023.



Jonna Häkkinen is professor for Industrial Design at the University of Lapland, Finland (2014-), and docent in Human Computer Interaction (HCI) at the University of Oulu, Finland. She leads the user experience research group LUX at U. Lapland. Previously, she was Director of User Experience (UX) at the Center for Internet Excellence U. Oulu (2012-2014), and research leader at Nokia Research Center (2007-2011). She received her PhD degree in computer science from the University of Oulu, Finland, in 2007. She has published 150+ peer reviewed scientific papers on HCI, focusing on mobile and ubiquitous computing and user centric design. She has received research grants as PI from Horizon 2020, Academy of Finland, Business Finland, and Interreg. She works at the cross-section of technology and design, and her group's works have been awarded at ISWC and exhibited at Milan Design week and Wanted Design, New York. Her current research interests include wearable technologies, unobtrusive interaction with technology, and utilizing design methods for creating and assessing future technology visions.



Ashley Colley is a university researcher at the University of Lapland. He has more than 25 years industry and research experience, e.g. 10 years as a Principal Designer at Nokia, and as co-founder of the successful health tech. start-up Oura Health (www.ouraring.com). He is the inventor of more than 30 patents/patent applications. He is an active member of the international Human Computer Interaction (HCI) research community and has published over 100 peer-reviewed publications.

SYNOPSIS

Artificial intelligence (AI) is increasingly integrated into our daily lives, and it is important to design interactions between humans and AI that are intuitive, meaningful, and experiential. The emerging research field and development trend of human-centered AI aims at providing concepts and methods for making AI understandable, while maintaining human oversight. This workshop will investigate how AI can be seamlessly and effectively incorporated into physical objects and environments.

Workshop participants will gain insights into creating and investigating human-AI interactions that utilise concepts from:

- models of human-AI interaction,
- embodied and multimodal interactions,
- tangible user interfaces and tangible explainable AI,
- AI applications as socio-technical systems.

The aim is to understand how AI systems in people’s everyday lives may offer users more intuitive experiences in human-AI interactions. The workshop will also contain critical and multi-perspective reflections to the concepts and solutions.

The workshop consists of a mixture of lectures, reading and discussion sessions, demonstrations, and collaborative hands-on design and prototyping activities. Each day of the workshop will have a variety of these learning modes so it will never get boring!

This hands-on group work project focuses on a tangible AI interaction concept selected from the instructors’ proposals or invented by the groups themselves. This project work will produce a design of an AI system or application concept that people (users) may interact with through a tangible device/object. Such a concept could combine a tangible device prototype design with other modalities such as conversational interaction (e.g. using an LLM). Thematically the project works concepts could address, for example:

- AI assistants for personal wellness,
- smart home systems,
- educational AI-powered devices for children,
- public user interfaces to AI-driven systems in the urban environment.

A “minimum viable user study” will be required to support the design and/or evaluation of the concept. The students will present the concept, the user study results, and their critical reflections of the outcome in the result seminar in the last day of the workshop.

Our primary target audience are doctoral students who want to learn about the design of tangible forms of AI. However, also MSc and BSc candidates are welcome to apply, likewise postdocs, and industry and public sector professionals wanting to deepen their skills and knowledge in tangible AI interactions. We welcome students with various disciplinary backgrounds, such as Human-Computer Interaction, human-centered AI, design, machine learning, and related fields to join and have fun while doing and learning.

STUDENTS

First name	Last name	Organization	Country
Eshtiak	Ahmed	Tampere University	Finland
Prasasthy	Balasubramanian	University of Oulu	Finland
Clara-Maria	Barth	University of Zurich	Switzerland
Joe	Brailsford	University of Melbourne	Australia
Jarod	Govers	University of Melbourne	Australia
Tora	Jarsve	University of Oslo	Norway
Nirasha	Kaluarachchi Thennakoon Appuhamilage	University of Oulu	Finland
Emma	Kirjavainen	University of Lapland	Finland
Jan	Leusmann	LMU Munich	Germany
Meagan	Loerakker	Chalmers University of Technology	Sweden
Teodora	Mitrevska	LMU Munich	Germany
Tim	Moesgen	Aalto University	Finland
Saumya	Pareek	University of Melbourne	Australia
Maryam	Rabie Yeganeh	University of Zurich	Switzerland
Clara	Sayffaerth	LMU Munich	Germany
Arvind	Srinivasan	Aarhus University	Denmark
Erkki	Tervo	University of Oulu	Finland
Kavindu	Wijesinghe	University of Oulu	Finland
Maximiliane	Windl	LMU Munich	Germany
Anastasiya	Zakreuskaya	Inria	France

WORKSHOP D

VIRTUALLY REAL? THE ART AND SCIENCE OF DESIGNING IMPACTFUL (OR EVEN TRANSFORMATIVE?) VIRTUAL EXPERIENCES

Instructors: Professor Bernhard Riecke, Simon Fraser University, Canada
 Dr. Matti Pouke, University of Oulu, Finland
 Dr. Paula Alavesa, University of Oulu, Finland

TA: University Teacher Elmeri Uotila, University of Oulu

Liaison student: Juho Kalliokoski, University of Oulu, juho.kalliokoski@oulu.fi

Forts: TS134 & TS135

SCHEDULE

DATE	TIME	TOPIC	LOCATION
Monday June 10	9:00-12:00	International UBICOMP Seminar 2024	L10
	12:00-13:00	Lunch	Kastari
	13:15-14:15	Campus Tour	-
	14:30-15:45	Summer School Kick Off	L10
	16:00-18:00	Introductions, icebreaker, workshop overview, project idea brainstorming, daily evening reflections/journaling	TS134 & TS135
	18:15-21:30	Get Together Party	Tellus
Tuesday June 11	10:00-12:00	Project idea brainstorming continues Team formation Project idea pitch & feedback	TS134 & TS135
	12:00-13:00	Lunch	Kastari
	13:00-15:00	Transformative Experience Design Frameworks and applying them to XR Storyboarding for VR: Introduction & activity	TS134 & TS135
	15:00-15:30	Coffee break	UBI Café
	15:30-18:00	Overview: Deliverables & Final exam Semi-structured team time to develop project further Minimum Viable Product demo, user-testing & feedback Daily evening reflections/journaling	TS134 & TS135
Wednesday June 12	10:00-12:00	SCRUM/project update/planning Agile & Project Development Agile User Testing for XR: Theory & activity	TS134 & TS135
	12:00-13:00	Lunch	Kastari
	13:00-15:00	Semi-structured team to develop project further	TS134 & TS135
	15:00-15:30	Coffee break	UBI Café
	15:30-18:00	Semi-structured team time to develop project further Minimum Viable Product demo, user-testing & feedback Daily evening reflections/journaling	TS134 & TS135
	19:00-22:00	Dinner Boat Cruise	Marketplace Pier
Thursday June 13	10:00-12:00	SCRUM/project update/planning Cybersickness and User Comfort in VR Locomotion	TS134 & TS135
	12:00-13:00	Lunch	Kastari
	13:00-15:00	Sound/audio for impactful XR Minimum Viable Product demo, user-testing & feedback Semi-structured team time to develop project further	TS134 & TS135
	15:00-15:30	Coffee break	UBI Café
	15:30-18:00	Semi-structured team time to develop project further Minimum Viable Product demo, user-testing & feedback Daily evening reflections/journaling	TS134 & TS135

Friday June 14	10:00-12:00	SCRUM/project update/planning How to showcase your project Minimum Viable Product demo, user-testing & feedback	TS134 & TS135
	12:00-13:00	Lunch	Kastari
	13:00-15:00	Semi-structured team time to develop project further Showcase and presentation practice	TS134 & TS135
	15:00-15:30	Coffee break	UBI Café
	15:30-18:00	Project presentations practice & feedback Keep-Fix-Change Daily evening reflections/journaling	TS134 & TS135
Saturday June 15	9:00-12:00	Final Exam	L10
	12:00-13:00	Lunch	UBI Café
	13:15-18:25	Result Seminar	L2
	18:30-18:50	Debriefing	TS134 & TS135
	20:30	School Dinner	Johteenpooki

INSTRUCTORS



Bernhard Riecke is full professor at the School of Interactive Arts and Technology at Simon Fraser University where he directs the iSpace Lab (an acronym for immersive Spatial Perception Action/Art Cognition and Embodiment). He joined SFU in 2008, after research-ing for a decade in the Virtual Reality Group of the Max Planck Institute for Biological Cybernetics in Tübingen, Germany and work-ing as a post-doctoral researcher at the Max Planck Institute, Vanderbilt University, and UC Santa Barbara. His key research areas include human spatial cognition/orientation/updating/navigation; Enabling robust and effortless spatial orientation in VR and telepresence; Self-motion perception, illusions (“vection”), interfaces, and simulation; and investigating and designing for transformative positive experiences in VR which he touches on in his TEDx talk [“Could Virtual Reality make us more human?”](#)



Matti Pouke is a docent and a postdoctoral researcher in the Perception Engineering research group at the Center for Ubiquitous Computing, University of Oulu, Finland. In his doctoral research he studied the transformation and visualization of real human activity in virtual environments. Since then, he has been involved in many research and development projects involving the use of virtual environments in public urban contexts, including smart buildings, architectural visualizations, and libraries. His current research focuses on human perception in multi-scale virtual reality experiences as well as Presence and Plausibility. He is a member of ACM and IEEE.



Paula Alavesä is a university lecturer in the Perception Engineering research group at the Center for Ubiquitous Computing, University of Oulu, Finland. Her doctoral thesis (2018) focused on playful appropriations of hybrid spaces where virtual and physical environments were combined into urban pervasive games. She has several years of experience in applied constructive research with location-based, augmented, and virtual reality technologies. Her current research continues the overarching theme of combining digital and physical realms using XR technologies and games or gamification approach as the mediator. She is a member of IEEE, ACM, SIGCHI and Digital Games Research Association (DiGRA).

SYNOPSIS

Are you ready to dive into the realm of Virtual Reality (VR) and unlock its full potential? Join us for a journey where you'll harness VR technology, including state-of-the-art head-mounted displays and the Unity game engine, to craft VR experiences that resonate and leave a lasting impact. This workshop is more than just learning the tools; it's about connecting with global peers in a project-based learning environment to ideate, create, and present VR experiences that push boundaries. Prepare to document your process, share your insights, and unveil your creations in a showcase that celebrates innovation and collaboration.

The virtual reality landscape is evolving rapidly, with advancements in technology making VR more accessible, affordable, and powerful than ever before. However, the true art of VR lies beyond just the technology. It requires a deep understanding of the user – their perception, cognition, emotions, and behavior within a computer-simulated environment. This workshop is designed to bridge the gap between technology and user experience, focusing on how to design VR experiences that are not just technologically sound but also psychologically impactful and emotionally resonant. We will explore the intricate balance between artistic creativity and scientific principles, aiming to create experiences that are transformative, not just in how they look or feel, but in how they connect with and affect the user. Join us to explore the frontiers of VR, where technology meets human experience, and where your creations can leave a lasting imprint on the virtual landscape.

This workshop offers a comprehensive exploration of the various facets necessary to design VR experiences that are not only impactful but potentially transformative. The core of the workshop revolves around project-based learning where participants will form diverse teams to conceptualize, develop, and refine a VR prototype. Our multifaceted approach intertwines theoretical lectures with practical demonstrations and hands-on activities.

Through this comprehensive approach, participants will not only develop technical prowess in VR development but also cultivate a critical understanding of how to create VR experiences that are meaningful, impactful, and potentially transformative. The main learning objectives of this workshop are multifaceted:

- Understanding and effectively using core VR concepts and technologies;
- Gaining familiarity with current and future applications of VR;
- Developing a nuanced understanding of how to (not) design for VR users (also known as “immersants”), focusing on creating immersive and impactful experiences;
- Engaging in an agile VR development process, fostering an environment of project-based learning and teamwork.
- Reflecting on and applying theoretical foundations such as transformative experience design frameworks, immersion/presence frameworks, and the reality-virtuality continuum.

As designing impactful VR experiences utilizes knowledge and skills from a variety of disciplines such as (but not limited to) computer science, psychology/cognitive science, human factors/HCI, user experience design, philosophy, new media, arts, and game design etc., we invite students from any of those and other disciplines that could contribute to designing impactful experiences to apply, and aim to create teams with complementary skill levels to maximize your learning, team experience, and impact of the VR project. We would like to note that this is an intensive and hands-on workshop requiring ideation and development of a VR project, which has many technical components. To ensure your success in the workshop and that everyone can support their project team, it is essential that each student comes in with sufficient technical background, specifically with at least some basic knowledge of the VR/game engine Unity we'll be using.

STUDENTS

First name	Last name	Organization	Country
Muhammad	Aliyu	Carnegie Mellon University Africa	Rwanda
Lisa	Barth	LMU Munich	Germany
Paulina Haide	Becerril Palma	University of Bergen	Norway
Mantas	Cibulskis	University of Copenhagen	Denmark
Venkata Srikanth Varma	Datla	Sapienza University of Rome	Italy
Mariagiovanna	Di Iorio	Politecnico di Milano	Italy
Max	Garcia Hinojosa	University of Oulu	Finland
Suman	Ghosh	Tampere University	Finland
Amy	Grech	University of Strathclyde	UK
Martin	Hedlund	KTH Royal Institute of Technology	Sweden
Mikki	Hiltunen	University of Oulu	Finland
Alessandro	Iop	KTH Royal Institute of Technology	Sweden
Iresh	Jayasundara Mudiyansele	University of Oulu	Finland
Juho	Kalliokoski	University of Oulu	Finland
Teemu	Kulojärvi	University of Oulu	Finland
Eetu	Laukka	University of Oulu	Finland
Mahdi	Mehrpour Moghadam	University of Oulu	Finland
Zhao	Ming	University of Oulu	Finland
Julian	Rasch	LMU Munich	Germany
Mohammadreza	Sadeghi	University of Oulu	Finland
Saurabh	Sharma	Indian Institute of Technology Patna	India
Yiyuan	Wang	University of Sydney	Australia



Fellow instructor Jonna Häkkinen trying out Google Glass in Mark Billinghurst's workshop in UBISS 2013

SOCIAL PROGRAM

GET TOGETHER PARTY

Monday June 10 at 18:15-21:30

Location: Tellus.

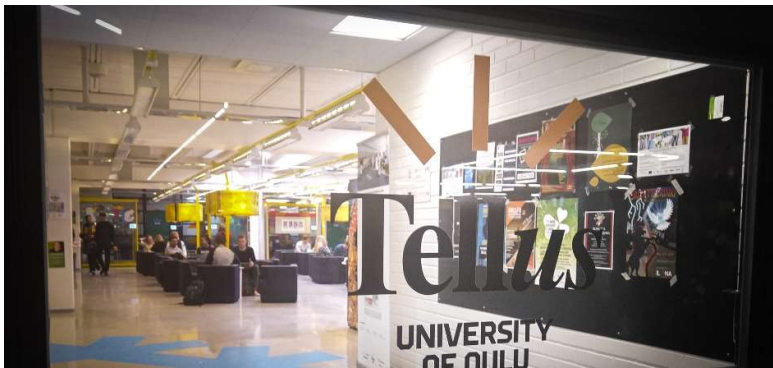
Transportation: Short walk from summer school site to Tellus. After party bus to Nallikari and downtown.

Program: Welcoming words, food, 30 Second Madness for students, Finnish Summer Olympics (weather allowing).

30 Second Madness: Students present themselves with 1 slide in 30 seconds. Memorable Madness Awards will be nominated by a distinguished jury and presented at the School Dinner.

Menu: Pizza, sushi, drinks.

Dress code: Casual.



Tellus



Class 2014 lined up for madness presentations



Boot throwing in the Finnish Summer Olympics



Class 2013 throwing Finnish darts



Class 2015 students chilling and grilling



Class 2019 balancing in mólkky

DINNER BOAT CRUISE

Wednesday June 12 at 19-22

Synopsis: 3-hour cruise aboard M/S Casandra in front of Oulu River estuary.

Departure location: Marketplace Pier (<https://goo.gl/maps/kiB9hmQJFphGZyHf8>).

Transportation:

- First bus from summer school site to marketplace departs at 18:15. **OBS!** This bus stops at Nallikari Holiday Village for **10 MINUTES** so that you can drop off your stuff – please make sure to be back on the bus in time!
- Second bus from summer school site to marketplace departs at 18:45.
- After the cruise buses from marketplace to Nallikari Holiday Village and Linnanmaa campus at 22:00 and 24:00.

Menu: Salad, grilled salmon / grilled chicken / feta cheese salad, chocolate cake, red and white wine, soda, cash bar.

Dress code: Casual.



M/S Casandra



Class 2011 safely back ashore



Class 2012 instructors Keith Cheverst and Aaron Quigley are fishing, while future instructor Jonna Häkikä is cheering them on



Class 2014 instructors enjoying dessert
No worries – the boat is not sinking 😊



Class 2016 enjoying sunset



Class 2017 instructor Alex Aurigi reeled in the pike that hit the lucky lure selected by Vice Rector Helka-Liisa Hentilä

SCHOOL DINNER

Saturday June 15 at 20:30

Location: Johteenpooki, Kansankentäntie 11 (<https://goo.gl/maps/GwSWpm9u5BnmBQy56>).

Transportation: Bus to dinner departs from summer school site at 20:00 and from Nallikari Holiday Village at 20:15.

Program: Welcoming words, dinner buffet, speeches, presentation of awards, music, sauna with swimming in the sea and outdoor hot tub (towels are provided), late night sausages, Timppa's outdoor fire pancakes.

Menu: Rucola green salad with house dressing, smoked salmon with remoulade sauce, squeaky cheese with melon salad, quinoa chicken salad with mint sauce, overripe beef in red wine sauce, potato gratin, oven baked root vegetables, barley bread, rye bread, spread, cheesecake with raspberry sauce, red and white wine, soda, coffee, tea, water.

Dress code: Casual.



Johteenpooki



Class 2011 Memorable Madness Award recipients



Class 2012 instructors skinny dipping at Nallikari Beach



Class 2013 instructors



Class 2015 project team "Lost Connection" posing with their Distinguished Project Award along instructor Mark Shepard



Class 2017 Distinguished Project Award recipients

SUMMER SCHOOL SITE

UNIVERSITY OF OULU, LINNANMAA CAMPUS, TIETOTALO BUILDING, DOOR E

Address: Erkki Koiso-Kanttilan katu 3 (<https://goo.gl/maps/BEm2bZHAy5Jzsxdx8>)



Linnanmaa Campus is the largest indoor campus in Europe

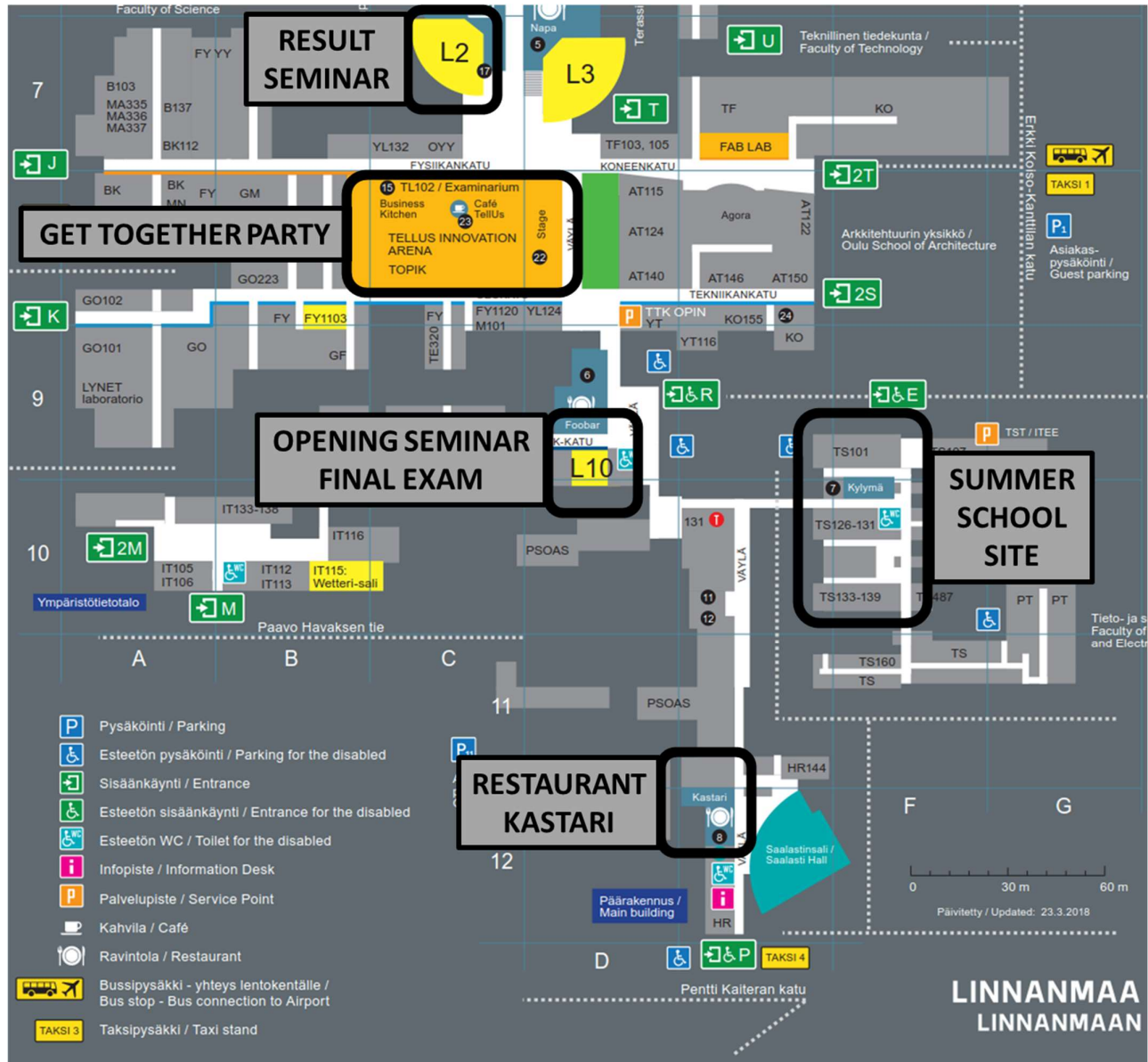


KEY LOCATIONS ON CAMPUS

"Oulu Campus Navigator" available in Android and iOS app stores

<https://play.google.com/store/apps/details?id=fi oulu oulu campus navigator &hl=en>

<https://apps.apple.com/fi/app/oulu-campus-navigator/id1461059229?l=fi>



ACCOMMODATION IN NALLIKARI HOLIDAY VILLAGE

Out of town students can purchase low-cost accommodation (40 EUR/day/pp in twin bedroom) in a luxurious villa in Nallikari Holiday Village located in a scenic setting next to Nallikari Beach.

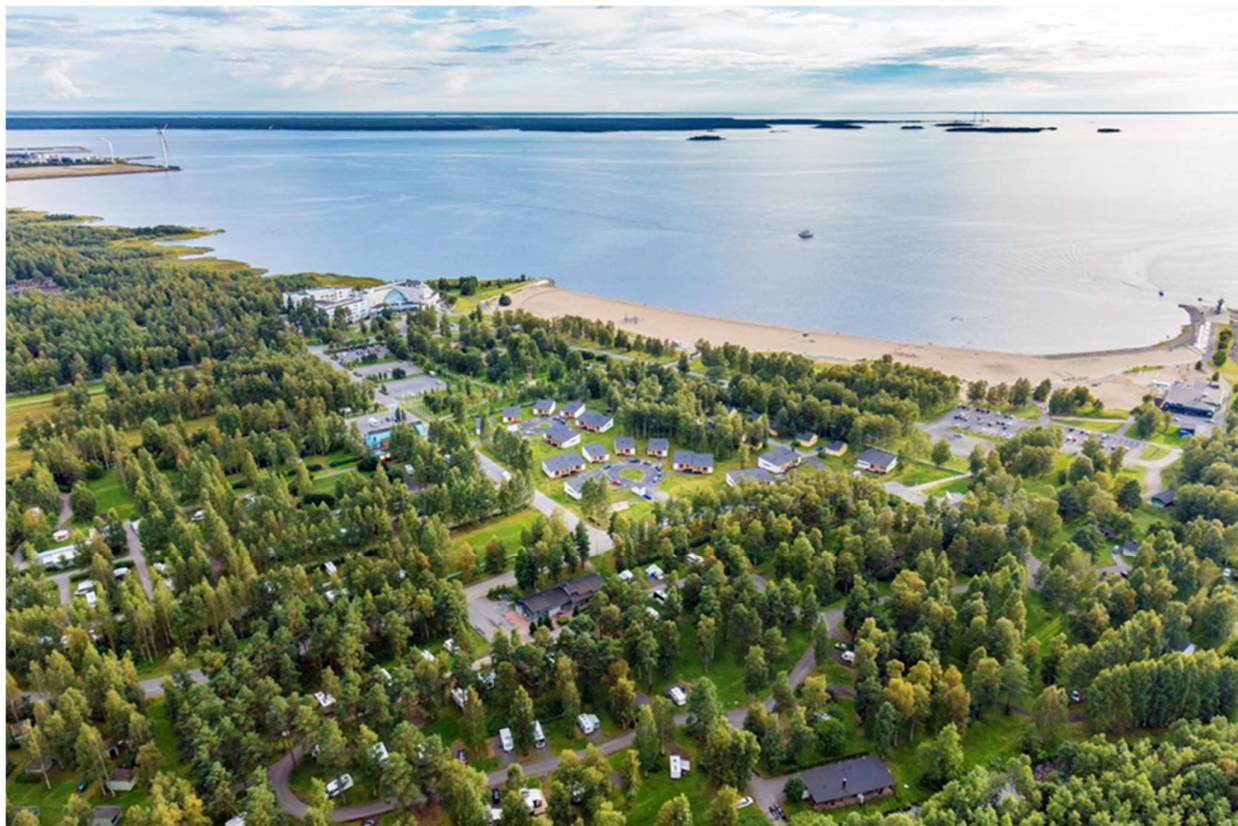
Attendees staying in Nallikari Holiday Village are offered a chance to sign up for prebooked taxis for arrival/departure transportation between Oulu airport and train station and Nallikari Holiday Village.



Sunset in Nallikari



Poiju villa



Nallikari Holiday Village and Nallikari Beach

TRANSPORTATION

UBISS CHARTER BUSES

At summer school site the charter bus stops at bus stop “Yliopisto E” on Erkki Koiso-Kanttilan katu.

At Nallikari Holiday Village the charter bus stops in front of the reception (Leiritie 10).

DATE	TIME	DEPARTURE LOCATION	DESTINATION
Mon June 10	8:15	Nallikari Holiday Village	Summer School Site
Mon June 10	21:30	Summer School Site	Nallikari Holiday Village – Downtown
Tue June 11	9:15	Nallikari Holiday Village	Summer School Site
Tue June 11	18:30	Summer School Site	Nallikari Holiday Village
Wed June 12	9:15	Nallikari Holiday Village	Summer School Site
Wed June 12	18:15	Summer School Site	Marketplace (Dinner Boat Cruise) (via Nallikari Holiday Village)
Wed June 12	18:45	Summer School Site	Marketplace (Dinner Boat Cruise)
Wed June 12	22:00	Marketplace	Nallikari Holiday Village - Linnanmaa Campus
Wed June 12	24:00	Marketplace	Nallikari Holiday Village - Linnanmaa Campus
Thu June 13	9:15	Nallikari Holiday Village	Summer School Site
Thu June 13	18:30	Summer School Site	Nallikari Holiday Village
Fri June 14	9:15	Nallikari Holiday Village	Summer School Site
Fri June 14	18:30	Summer School Site	Nallikari Holiday Village
Sat June 15	8:15	Nallikari Holiday Village	Summer School Site
Sat June 15	11:45	Nallikari Holiday Village	Summer School Site
Sat June 15	19:00	Summer School Site	Nallikari Holiday Village
Sat June 15	20:00	Summer School Site	Johteenpooki (School Dinner)
Sat June 15	20:25	Nallikari Holiday Village	Johteenpooki (School Dinner)

LOCAL BUSES

Buses 1, 2, 3 and 8 operate frequently between the summer school site (bus stop “Yliopisto E” for buses going towards downtown) and downtown (several bus stops for buses going to summer school site, for example “Kaupungintalo P”). Schedules are available on <https://www.oulunliikenne.fi/> or in Google Maps (search for the desired bus stop).

Tickets and fares: <https://www.osl.fi/en/tickets-and-fares/>.

LOCAL TAXI

Taxi stop at the summer school site: University of Oulu, Taksi 1

OTAXI call center: +358 600 300 81

OTAXI mobile app: <https://www.otaxi.fi/en/otaxi-services/otaxi-app/>

COMMUNICATION AND SOCIAL MEDIA

EMAIL LISTS

Everybody: ubiss-all@lists.oulu.fi
 Instructors: ubiss-instructors@lists.oulu.fi
 Staff: ubiss-staff@lists.oulu.fi

Workshop A: ubiss-a@lists.oulu.fi
 Workshop B: ubiss-b@lists.oulu.fi
 Workshop C: ubiss-c@lists.oulu.fi
 Workshop D: ubiss-d@lists.oulu.fi

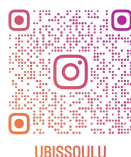
SOCIAL MEDIA



<https://discord.gg/KDv3hBVc>



<https://vimeo.com/groups/315324>



#UBISS2024, @ubissoulu



<https://www.flickr.com/groups/2706010@N22/pool/page5>

PHONE NUMBERS

Summer school staff		
Chair	Timo Ojala	+358 40 567 6646
Co-chair of the organizing committee	Anabela Berenguer	+358 45 602 6793
Co-chair of the organizing committee	Evan Center	+358 50 567 7216
Lab engineer	Hannu Rautio	+358 40 508 9952
Workshop A liaison student	Shanaka Badde Liyanage Don	+358 41 721 6987
Workshop B liaison student	Amirhossein Ghaffari	+358 41 582 3802
Workshop C liaison student	Prasasthy Balasubramanian	+358 50 345 3997
Workshop D liaison student	Juho Kalliokoski	+358 41 710 9323
General services		
Taxi	(24 hours)	+358 600 300 81
City of Oulu tourist office	(office hours)	+358 8 558 41330
Directory services	(24 hours)	0100100, 020202
Emergency	(24 hours)	112

ASSORTED PRACTICAL MATTERS

REGISTRATION FEE: 300 EUR

Registration fee includes participation in one workshop, social program, local transportation, daily lunches and UBI Café.

CREDITS AND CERTIFICATES

Credits: 5.0 ECTS (subject to approval by a participant's home university).

All participants should verify beforehand the passing criteria of (postgraduate) studies enforced by their home university. At some universities participation is sufficient for credits while some universities such as the University of Oulu require passing a final exam.

The passing criteria for the students of the University of Oulu are as follows:

1. Full participation in the selected workshop, including the opening seminar (International UBICOMP Seminar 2023).
2. Successful contribution to a project completed during the workshop. The project contributes 50% of the final grade on scale: Fail, 1 (lowest passing grade) - 5 (highest passing grade).
3. Passing the final exam based on a reading package selected by the instructor and the material presented during the workshop. The final exam contributes 50% of the final grade on scale: Fail, 1 (lowest passing grade) - 5 (highest passing grade).

A certificate of participation will be awarded to all students who complete requirements 1 and 2, and pay the registration fee. This certificate of participation does not include the final grade.

A separate certificate of passing the summer school with a particular final grade will be awarded to all students who complete requirements 1, 2 and 3, and pay the registration fee.

DAILY LUNCHES

Registration includes vouchers for having lunch in Restaurant Kastari on campus on Mon-Fri. Sat lunch will be served in UBI Café.

UBI CAFÉ

Our own UBI Café serves FREE coffee, tea, cold drinks, cookies, fruits and DIY sandwiches at the summer school site.

Opening hours: Mon 8:30-18:15, Tue 9:30-18:15, Wed-Fri 9:30-18:30, Sat 8:30-19:00.

PERSONAL LAPTOPS

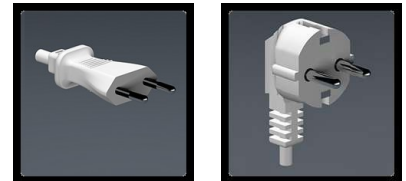
Required for all students.

Student not being able to bring own laptop should contact their liaison student.

Finland uses 220 V / 50 Hz electricity with plug types C and F shown right.

Extension cords will be available in lecture halls.

Adapters can be borrowed from the helpdesk.



WIRELESS INTERNET ACCESS

panOULU WLAN (SSID *panoulu*) providing open (no authentication) and free (no payment) wireless Internet access is available in lecture halls and throughout the City of Oulu in a hotspot manner.

At the University of Oulu campus WLAN access points also offer SSID *eduroam* that can be used with home organization's user account if the home organization is a member of the Eduroam roaming agreement. *eduroam* provides a secure connection and has higher capacity gateway to the Internet.



PRINTING

Documents to be printed should be emailed in PDF format to ubiss.helpdesk@gmail.com with printing instructions (number of copies, size in A3 or A4, black-and-white vs color, 1-sided vs 2-sided). Ready prints are collected from the helpdesk.

UBISS LEGACY

<p>UBISS 2023 (11th International UBI Summer School), June 12-17, 2023, 63 students from 10 countries in 3 workshops</p> <p>A: CREATING VIRTUAL REALITY EXPERIENCES FOR SOCIAL GOOD (Professor Victoria Interrante, University of Minnesota, USA; Dr. Matti Pouke & Dr. Paula Alaves, University of Oulu, Finland)</p> <p>B: SMART INTERNET OF THINGS (IOT) WIRELESS CONNECTIVITY IN 5G AND BEYOND (Prof. Petar Popovski, Assistant Professor Israel Leyva-Mayorga & Dr. Shashi Raj Pandey, Aalborg University, Denmark)</p> <p>C: THE MIND ELECTRIFIED: EEG/ERP IN THE LAB AND IN THE WILD (Prof. Kara D. Federmeier, UIUC, USA; Dr. Evan G. Center, University of Oulu, Finland; Dr. Ryan J. Hubbard & Dr. Melissa Troyer, UIUC, USA)</p>
<p>UBISS 2019 (10th International UBI Summer School), June 10-15, 2020, 83 students from 10 countries in 4 workshops</p> <p>A: FROM REALITY TO VIRTUALITY: THE SCIENCE AND ART OF CREATING VR EXPERIENCES (Prof. Frank Steinicke & Eike Langbehn, University of Hamburg, Germany)</p> <p>B: THE IOT – WIRELESS TECHNOLOGIES AND APPLICATIONS: A JOURNEY FROM ZIGBEE TO 5G (Prof. Roberto Verdone & Assist. Prof. Chiara Buratti, University of Bologna, Italy)</p> <p>C: CRITICAL MAKING: DESIGNING FOR ACTIVISM (Assoc. Prof. Eric Paulos & Assist. Prof. Jill Miller, University of California, Berkeley, USA; Assoc. Prof. Georgi V. Georgiev, University of Oulu, Finland)</p> <p>D: UBIQUITOUS COMPUTING: ENABLING TECHNOLOGICALLY ADVANCED LIVING (Prof. Anind K. Dey, University of Washington, USA; Assist. Prof. Edison Thomaz, University of Texas at Austin, USA; Adj. Prof. Denzil Ferreira, University of Oulu, Finland)</p>
<p>UBISS 2018 (9th International UBI Summer School), June 4-9, 82 students from 15 countries in 4 workshops</p> <p>A: HUMANISTIC HCI (Prof. Jeffrey Bardzell & Prof. Shaowen Bardzell, Indiana University, USA)</p> <p>B: WEARABLE AND MOBILE HEALTH AND BEHAVIOR TRACKING (Prof. Jakob E. Bardram, Technical University of Denmark, Denmark & Adj. Prof. Denzil Ferreira, University of Oulu, Finland)</p> <p>C: DESIGNING FOR THE MARGINS (EXTRA-URBAN INTERACTIONS) (Prof. Alan Dix, Swansea University, UK & Adj. Prof. Simo Hosio, University of Oulu, Finland)</p> <p>D: MAKE. WEAR. MATTER: EXPLORATIONS IN DESIGN, MAKING & CREATIVITY (Prof. Mark D. Gross & Prof. Ellen Yi-Luen Do, University of Colorado Boulder, USA; Adj. Prof. Georgi V. Georgiev, University of Oulu, Finland)</p>
<p>UBISS 2017 (8th International UBI Summer School), June 12-17, 53 students from 9 countries in 4 workshops</p> <p>A: DESIGNING CITY FUTURES THROUGH AUGMENTED PLACE (Prof. Alessandro Aurigi & Dr. Katharine Willis, Plymouth University, UK)</p> <p>B: VIRTUAL CITY MODELS (Prof. Norbert Haala & Patrick Tutzauer, University of Stuttgart, Germany)</p> <p>C: DIGITAL PRODUCT REALIZATION: MAKING THINGS THAT MATTER (Dan Somen, Stanford University, USA & Dr. Georgi V. Georgiev, University of Oulu, Finland)</p> <p>D: AUGMENTED URBAN EXPERIENCE AND MEDIATED SPATIAL NARRATIVES (Reader Ava Fatah gen Schieck & Dr. Simon Julier & Petros Koutsolampros, University College London, UK; Dr. Ana Javornik, Newcastle University, UK)</p>
<p>UBISS 2016 (7th International UBI Summer School), June 13-18, 68 students from 12 countries in 4 workshops</p> <p>A: UBICOMP IN THE WILD: DEVELOPING AND DEPLOYING PERVASIVE DISPLAYS (Prof. Nigel Davies & Dr. Sarah Clinch, Lancaster University, UK)</p> <p>B: EYEWORX: DESIGNING INTERACTIONS WITH EYE MOVEMENTS (Prof. Hans Gellersen, Lancaster University, UK & Dr. Eduardo Velloso, University of Melbourne, Australia)</p> <p>C: COLLABORATION AND PERSONAL DEVICES AROUND INTERACTIVE DISPLAYS (Prof. Giulio Jacucci, University of Helsinki, Finland & Petri Savolainen, HIIT, Finland)</p> <p>D: NEXT GENERATION VIRTUAL REALITY: PERCEPTION MEETS ENGINEERING (Prof. Steve LaValle & Dr. Anna Yershova, UIUC, USA)</p>
<p>UBISS 2015 (6th International UBI Summer School), June 8-13, 56 students from 14 countries in 4 workshops</p> <p>A: SENSOR-BASED INTELLIGENT MOBILE INTERFACES (Dr. Per Ola Kristensson, University of Cambridge, UK)</p> <p>B: DESIGN FICTIONS FOR DATA GEOGRAPHIES (Associate Prof. Mark Shepard, The State University of New York, USA)</p> <p>C: DESIGNING GAMES FOR THE BODY (Associate Prof. Florian 'Floyd' Mueller, RMIT University, Australia)</p> <p>D: 3D WEB AND OPEN DATA FOR SMART CITIES HACKATHON (Prof. Timo 'Timp' Ojala, University of Oulu, Finland)</p>
<p>UBISS 2014 (5th International UBI Summer School), June 9-14, 59 students from 16 countries in 4 workshops</p> <p>A: DESIGNING URBAN INTERACTIONS FOR PARTICIPATORY PUBLICS (Prof. Martin Brynskov, Aarhus University, Denmark)</p> <p>B: URBAN AUGMENTED REALITY (Prof. Steven Feiner, Columbia University, USA)</p> <p>C: LEARNING FROM PEOPLE TO DESIGN FUTURE "ENJOYING MACHINES" (Prof. Oskar Juhlin, Stockholm University, Sweden)</p> <p>D: DESIGNING BODILY PLAY (Dr. Florian 'Floyd' Mueller, RMIT University, Australia)</p>
<p>UBISS 2013 (4th International UBI Summer School), June 10-15, 76 students from 18 countries in 4 workshops</p> <p>A: EXPERIENCE-DRIVEN DESIGN OF UBIQUITOUS INTERACTIONS IN URBAN SPACES (Prof. Kaisa Väänänen-Vainio-Mattila, Tampere University of Technology, Finland & Dr. Jonna Häkkinen, University of Oulu, Finland)</p> <p>B: DESIGNING MOBILE AUGMENTED REALITY INTERFACES (Prof. Mark Billinghurst, University of Canterbury, New Zealand)</p> <p>C: DEVELOPING UBIQUITOUS COMPUTING DEVICES (Prof. Albrecht Schmidt, University of Stuttgart, Germany)</p> <p>D: URBAN RESOURCE NETWORKS (Prof. Malcolm McCullough, University of Michigan, USA)</p>
<p>UBISS 2012 (3rd International UBI Summer School), May 28 - June 2, 51 students from 10 countries in 3 workshops</p> <p>A: INFORMATION VISUALISATION FOR UBICOMP DATA (Prof. Aaron Quigley, University of St. Andrews, Scotland)</p> <p>B: SUPPORTING COMMUNITY THROUGH INTERACTIVE PUBLIC DISPLAYS (Dr. Keith Cheverst, Lancaster University, UK)</p> <p>D: URBAN SENSORIA: HUMAN-CENTERED COMPUTING IN PRACTICE (Dr. Alejandro 'Alex' Jaimes, Yahoo! Research)</p>
<p>UBISS 2011 (2nd International UBI Summer School), May 23-28, 36 students from 6 countries in 3 workshops</p> <p>A: OPEN PERVASIVE DISPLAY NETWORKS (Dr. Adrian Friday, Lancaster University, UK)</p> <p>D: EMBEDDED WEB SERVICES (Chief Nerd Zach Shelby, Sensinode Ltd., Finland)</p> <p>E: SOCIAL AND CULTURAL ASPECTS OF NEW MEDIA (Prof. Leopoldina Fortunati, University of Udine, Italy)</p>
<p>UBISS 2010 (1st International UBI Summer School), May 31 - June 4, 72 students from 20 countries in 6 workshops</p> <p>A: REAL WORLD CONTEXT-AWARE SYSTEMS (Prof. Anind Dey, CMU, USA)</p> <p>B: URBAN INFORMATICS AND SUSTAINABLE CITIES (Prof. Marcus Foth & Dr. Jaz Choi, QUT, Australia; Patrick Hofmann, Google)</p> <p>C: URBAN SOCIAL NETWORKS ANALYSIS (Prof. Vassilis Kostakos, University of Madeira, Portugal)</p> <p>D: CREATING AND SHARING ARTISTIC EXPERIENCES WITH UBIQUITOUS TECHNOLOGY (Dr. Jürgen Scheible, Aalto University, Finland)</p> <p>E: IP-BASED WIRELESS SENSOR NETWORKS (Head of Research Zach Shelby, Sensinode, Finland)</p> <p>F: INTERACTIVE TEXTURES – RETHINKING MATERIALITY (Prof. Mikael Wiberg, Umeå University, Sweden)</p>

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