CoCi Newsletter on Co-Evolving City Life

Thank you for your interest in our ERC Advanced Investigator Grant on "Co-Evolving City Live" ("CoCi"). Some of you were so kind to send us support letters a while ago. The project had been highlighted by the European Research Council. However, do to the pandemic, it started somewhat later than planned, namely in autumn 2020.

The CoCi project is exploring a new paradigm, in which smart technologies and citizens work together to create more participatory, efficient, sustainable, and resilient cities. The project's main focus is on how digital assistance can enable citizens to make significant contributions to a better future, and how digital societies can align with values such as freedom, equality, and solidarity. One paper of interest in this connection is on the Ethics of Smart Cities.

So far, the CoCi team has completed various online, laboratory, and virtual reality studies, of course, after receiving the required ethics approvals for them. The team has also developed a participatory air quality measurement device and written a number of peer-reviewed book chapters and papers. A simulation-based computer study exploring ways to improve traffic and environmental impact in the city of Barcelona, using Braess' paradox, has been performed as well. Additionally, a MOOCs-style course related to the project has been prepared. Some of the team's recent work includes a book chapter on the socio-economic implications of the digital revolution, which compares two paradigms for society: one based on centralization and the other on empowerment and collective intelligence. Another paper focuses on the ethics of smart cities and how a value-sensitive design approach can promote more sustainable urban development.

Further works include a proof-of-concept for citizen-centric environmental monitoring, a study on translating citizen-generated air quality data into policy, an open-source toolbox for visualizing and analyzing crowd-sourced sensor data, and a large-scale "digital twin" of Barcelona's traffic. Supplementary to the CoCi project, we have also examined the potentials, limitations, and ethical issues surrounding the use of digital twins in various applications. Furthermore, the CoCi team has made progress in exploring new paradigms for traffic control of urban road networks. A hybrid reinforcement learning approach, which relies on the analytic heuristic for exploration has been proposed, which requires less energy for training, and converges to better results. Also, a study has been conducted to analyze the adaptability and sustainability of machine learning approaches used for traffic signal control.

Furthermore, the team has made significant progress towards expanding the concept of participatory resilience. A related review paper has been recently published, which highlights how participatory approaches possess a great potential to enhance multi-stakeholder cooperation, social innovation, and capacity building for resilience. In September 2022, the CoCi team also organized a block course in form of a Participatory Resilience Hackathon at ETH, which received a great response and feedback from the students. Here is a teaser to get a sneak-peak into what happened at the hackathon. On the public outreach and multiple stakeholder engagement front, the CoCi team has initiated the "Know the air you breathe" project in collaboration with the Citizen Science Center Zurich. So, far two co-creation workshops have been organized with the citizens and decision makers from Zurich for indoor air quality monitoring. The work has received recognition from the civic as well as the research community. The outcomes have been recently featured in Nature and ERC- Showcase of Citizen Science.

Thus, the CoCi project is making great progress in developing and testing new concepts for more resilient, sustainable, and participatory cities. The team's work is contributing to a better understanding of how digital assistance can enable citizens to play a more active role in shaping the future of their cities and communities.

Co-creation Workshop

Participatory Resilience Hackathon

Environmental Sensing Kit

Some visual highlights of our activities

Upcoming Events:

We are organizing a Workshop on **"Co-Creating the Future: Participatory Cities and Digital Governance"** in collaboration with the Complexity Science Hub (CSH), Vienna. The workshop will take place at CSH Vienna from September 11-13, 2023. Details can be found here. It will be possible to apply for Poster Contributions. We would be very happy to see you all at this exciting event!

Furthermore, we are running Twin Workshops on the **"Ethics of Smart Cities"** in Zurich this May. Detailed information will be shared with you on request.

Next year, in 2024, we may host a small workshop , tentatively on **"Participatory Smart Cities"**. Let us know if you are interested in joining. Also, if you don't mind, we would approach some of you with the opportunity to give a talk in one of our seminars in the upcoming semesters.

We very much look forward to our future interactions, collaboration and exchange!

Acknowledgment: