Smart Cities – Making Cities Livable and Sustainable

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Abstract: Given growing urban populations, it is clear we need to change our behaviour to better manage the sharing of increasingly constrained urban resources, such as the road network, energy, water, and so on. With an expected 70% of the world’s population living in urban areas by 2050, pressure on resources and infrastructure in cities and communities around the globe is growing. Cities consume over two-thirds of the world’s energy and account for more than 70% of global CO2 emissions. In an analysis of 13,000 cities published in 2018, the critical impact city dwellers have on overall carbon emissions is clear, and even more interestingly, it could be argued that city planning is hugely influential as it was found that roughly one third of an urban resident’s footprint is determined by that city’s public transportation options and building infrastructure [Mo18]. Pressure on city resources is clearly affecting quality of life, adversely impacting the environment and limiting economic growth.

Significant advances have been made in recent years relating to high-bandwidth network connectivity and highly-instrumented cities providing real-time information about the state of a city’s resources. These technologies can be exploited to enable cities to work better. This talk explores how automation, using real-time decision-making, can play a part in assisting citizens in making better use of the resources available to them. The goal is not to take over citizens’ lives, but to remove the onus on citizens to be constantly aware of potential opportunities for optimising resource sharing. In particular, the talk draws on our recent research, using examples from autonomous vehicles [MBL19], vehicle sharing [GC18] and energy demand-side management [Ma19].

References


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doi:10.18420/inf2019_02