

Abstract

This thesis proposes a DIY environmental sensing approach that empowers citizens to reinvigorate people's awareness of, and concern for, pollution. Current air pollution measuring techniques are described, and a new concept of participatory sensing is presented. I argue that technological advances in sensing, computation, storage, and communication now have the power to turn the near-ubiquitous mobile phone into a global mobile sensing device, and commence the participatory paradigm employing amateurs in environmental data collection. To test the thesis, PAIR, a prototype with interchangeable sensor, was developed. It aims to enable people to sense environment on-the-go and provide users with immediate feedback. Such data can make people learn about their environment, make them aware of air pollution causes, and eventually even bring behavioral changes. Consequently, a user survey and interviews identify strengths and weaknesses of the mobile sensing device, and based on the usability requirements, we conclude design recommendations for further development. Finally, we identify the main benefits amateur data collection and participatory sensing represent for urban dwellers, and we evaluate issues and challenges they have yet to overcome.