Mobile Robot Olfaction for Real-World Applications–From Disaster Response to Environmental Monitoring

Guest Editor:

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Message from the Guest Editor

Dear Colleagues,

Mobile Robot Olfaction, the research of combining intelligent mobile robots with an artificial sense of smell, has made tremendous progress in the last decade. Important developments in sensor and robot technology, as well as intelligent data processing (fueled by the promising progress in AI/Machine Learning) present the prospect of a wide variety of practical applications. In such applications, gas sensors may be used as one modality on a single robot, a robot team, or as a mobile (robotic) node in a heterogeneous sensor network. On one end of the spectrum are applications in immediate disaster response, where a high degree of mobility, fast operation, and highly-efficient collaboration with human operators and decision makers is crucial and only ad hoc sensor networks are available, if at all. On the other end of the spectrum are long-term environmental monitoring campaigns where response times are often less critical and stationary sensor networks and other permanent infrastructure may exist.

This Special Issue focuses on contributions towards real-world applications of "Mobile Robot Olfaction". Papers should address how robotic systems, perceptual algorithms, chemical sensors, or approaches to sensor fusion, decision support, human-robot interaction or adaptive sensor planning deal with real-world conditions, e.g., with limited control of the environment, open sampling processes, continuous measurements, rapidly fluctuating concentration levels, turbulent gas dispersal, etc. Papers including prototype demonstrations in relevant real-world scenarios are particularly welcome.

Prof. Dr. Achim J. Lilienthal
Guest Editor

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