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A Decision Support System for the Detection of Illicit Substance Production Sites

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Abstract : Manufacturing home-made explosives and synthetic drugs is an increasing problem in Europe. To combat that, a data fusion system is proposed for the detection and localization of production sites in urban environments. The data consists of measurements of properties of wastewater performed by various sensors installed in a sewage network. A four-stage fusion strategy allows detecting sources of waste products from known chemical reactions. First, suspicious measurements are used to compute the amount and position of discharged compounds. Then, this information is propagated through the sewage network to account for missing sensors. The next step is clustering and the formation of tracks. Eventually, tracks are used to reconstruct discharge events. Sensor measurements are simulated by a subsystem based on real-world data. In this paper, different discharge scenarios are considered to show how the parameters of used algorithms affect the effectiveness of the proposed system. This research is a part of the SYSTEM project (SYnergy of integrated Sensors and Technologies for urban sEcured environMent).

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