

Mobile Sensing System Applications



Christian Claudel

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CURRENT RESEARCH

Easing road congestion and monitoring severe weather conditions with budget-friendly mobile solutions

Dr. Christian Claudel wants to build systems that will have an immediate impact on society. As a systems engineer at King Abdullah University of Science and Technology in Saudi Arabia, he has pinpointed two societal issues to tackle - traffic congestion and flash flood monitoring.

Traffic congestion is a problem in most areas of the world, and traffic control is one of the most promising ways of addressing traffic congestion, since it does not require building additional roads. However, traffic control requires accurate traffic flow maps, and precise demand forecasts on the road network. The new traffic sensing systems Dr. Claudel is developing could feed input data to traffic control systems such as smart traffic lights, ramp metering or variable speed limit control, thereby creating better traffic flow and safer driving conditions.

With respect to flash floods, currently available systems simply cannot efficiently monitor these events. Fixed sensor networks are too expensive to deploy over large areas and maintain. Satellite-based systems, such as synthetic aperture radars, lack the resolution to monitor floods. By using UAV-based systems (unmanned aerial vehicles) or drones with Lagrangian microsensors, Dr. Claudel sees possible sensing solutions that are economically viable, and can be available on-demand, over extended areas.

- Dr. Claudel's general area of expertise is Lagrangian sensing systems, that is, mobile systems, applied to distributed parameter systems monitoring. His objective is to build Lagrangian sensor systems for monitoring physical phenomena at a large scale.
- Uniquely, Dr. Claudel's vision would be to realize the "smartdust..."

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AFFILIATION

 King Abdullah University of Science and Technology

RESEARCH AREAS

Technology, Informational Sciences / Internet, IOT, Devices, Data, Natural Disasters / Emergency

FUNDING REQUEST

Your contributions would help Dr. Claudel retain the current 7 Ph.D. students and one post doc working on the project. It would also help pay for the equipment required to test his theories and to demonstrate that the system scales up. They would like to build large systems containing hundreds or thousands of sensors for both projects. Since the cost of the sensors is relatively low (tens of dollars at most), this would require funding on the order of \$100,00.

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