

EXPERIMENTAL TESTING OF A CIRCUITAL BOARD FOR THE WILDLIFE ROAD CROSSING MONITORING

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Abstract

Vehicle accidents due to wild animal crossing is an open issue, constantly investigated. Different solutions were proposed in the past in order to limit these events to happen. The proposed prototype integrates mainly one sensor technology, in particular radar sensors, which allow to sense the presence/movements of animals which are in their field of view. The data these sensors acquire have to be correctly read and managed in order to give the best representation of the sensed environment only by looking at the acquired data. This should allow the system to avoid fake warning on the presence of animals near the road board and on the contrary to properly sign the crossing of an animal in the surroundings every time it happens. The decision taken on the basis of the acquired data will enable or disable for instance an actuator which will sign the driver the presence or not of a crossing animal.

Reference Bibliography: Wireless Sensor Network [1]-[7].

- [1] F. Viani, F. Robol, A. Polo, P. Rocca, G. Oliveri, and A. Massa, "Wireless architectures for heterogeneous sensing in smart home applications - concepts and real implementations," Proc. IEEE, vol. 101, no. 11, pp. 2381-2396, Nov. 2013.
- [2] F. Viani, G. Oliveri, M. Donelli, L. Lizzi, P. Rocca, and A. Massa, "WSN-based solutions for security and surveillance," 40th European Microwave Conference 2010 (EuMC2010), Paris, France, pp. 1762-1765, Sep. 26 - Oct. 1, 2010.
- [3] F. Viani, P. Rocca, G. Oliveri, and A. Massa, "Pervasive remote sensing through WSNs," 6th European Conference on Antennas Propag. (EuCAP 2012), Prague, Czech Republic, Mar. 26-30, 2012.
- [4] F. Viani, P. Rocca, M. Benedetti, G. Oliveri, and A. Massa, "Electromagnetic passive localization and tracking of moving targets in a WSN-infrastructured environment," Inverse Problems - Special Issue on "Electromagnetic Inverse Problems: Emerging Methods and Novel Applications," vol. 26, pp. 1-15, May 2010.
- [5] F. Viani, P. Rocca, G. Oliveri, D. Trincherio, and A. Massa, "Localization, tracking and imaging of targets in wireless sensor network: An invited review," Radio Science, vol. 46, 2011.
- [6] F. Viani, L. Lizzi, P. Rocca, M. Benedetti, M. Donelli, and A. Massa, "Object tracking through RSSI measurements in wireless sensor networks," Electronics Letters, vol. 44, no. 10, pp. 653-654, 2008.
- [7] F. Viani, P. Rocca, G. Oliveri, and A. Massa, "Electromagnetic tracking of transceiver-free targets in wireless networked environments," 6th European Conference on Antennas Propag. (EuCAP 2011), Rome, Italy, pp. 3808-3811, Apr. 11-15, 2011 (Invited paper).

*This report is submitted in partial fulfillment of the degree of the course "TPCW".
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