

Research Title:

Bats-Inspired Spectrum Allocation in Cognitive Radars

Primary Investigator:

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Automotive radars are expected to become key sensors enabling autonomous driving. Autonomous vehicles equipped with dozens of automotive radars are expected to be mass-deployed in public roads in the very near future. Therefore, it is expected that in practical urban scenarios, multiple radars will operate in proximity. This will inevitably create mutual interferences challenge, whose dramatic effect on the radar performance might slow down the autonomous transportation revolution. It is well known that thousands of bats succeed to navigate using active sonar in dense proximity. This research aims to address the automotive radar mutual interference problem and to develop a bat-inspired cognitive automotive radar approach that will be able to mitigate mutual interferences without significant performance degradation. We aim to develop bat-inspired algorithms for mutual interference mitigation in cognitive radars. These algorithms will be first evaluated using a bat simulator. Next, a demonstrator system with multiple mobile platforms equipped with radar sensors will be built to emulate practical urban scenarios and to evaluate performance of the proposed sensing approach.