

# Security in VANETs: Lightweight Protocol for Group-of-Vehicles Masters (LPGVM)

Hamaciré El Hadj Kalil\*, Ahmed Kora\* and Selma Boumerdassi†

\*ESMT/eINNOV, Ex Terrain Foyer Rocade Fann Bel Air, BP 10 000 Dakar Liberté SENEGAL

†CNAM/CEDRIC, 292 rue Saint Martin, 75003 Paris, France.

elhadjalalpha@gmail.com, ahmed.kora@esmt.sn, selma.boumerdassi@inria.fr

**Abstract** – this paper focuses on the Vehicle Ad-hoc NETWORK (VANET), especially on the security of information exchanged in the network. We therefore propose in this document a secure communication protocol, based on VANET network standards. A lot of research is under way to make possible the large-scale deployment of VANETs. It is with this idea that we decided to propose a communication protocol based on an architecture organized in groups. For each group of vehicles, a Master is appointed who is the leader of the group. In our proposal, only a group Master can communicate with an RSU (Roadside Unit). In the literature, in general, the group leader takes care alone of managing the group. Here we involve the RSU in the group management to reduce the workload of the Master. In general, the organization of the group network lightens the workload of the RSU. But our proposal will also reduce the burden of the Master and thus significantly improve the performance of the network.

**Keywords:** Group, Master, Protocol, Security, VANET



Hamaciré E. KALIL is graduated in ICT Engineering in 2017 from “Ecole Supérieure Multinationale des Télécommunications” (ESMT), Dakar – Sénégal. Currently, he is Ph.D student at ESMT. His research area cover VANET, Telecoms, SoftWare development etc.



Ahmed D. KORA is IEEE senior member. He is graduated in ICT Engineering in 2003 from “Ecole Supérieure Multinationale de Télécommunications” (ESMT), Dakar, SENEGAL. He received his Ph.D. degree in telecommunication from the University of Limoges, France, in 2007. He is promoted as full professor by the regional accreditation institution (CAMES) and currently the Director of Teaching, Trainings and Research at ESMT. His research area covers QoS/QoE, network radio coverage, fiber optic transmission system, communication and networks system architecture, open network management solutions, universal access, low cost IT systems for development, etc.



Selma Boumerdassi is an Associate Professor at Conservatoire National des Arts et Métiers, Paris. She received a Ph.D. in Computer Science from University of Versailles in 1998, where she also served as an Assistant Professor from 1998 to 2000. Her research interests include wireless and mobile networks, with a special focus on the impact and use of social networks. Selma Boumerdassi worked on several national projects and served as an expert for the evaluation of French national projects (ANR). She is the author of more than 50 articles and serves as a TPC member for various international journals and conferences.