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Intelligent and Connected Vehicle Security

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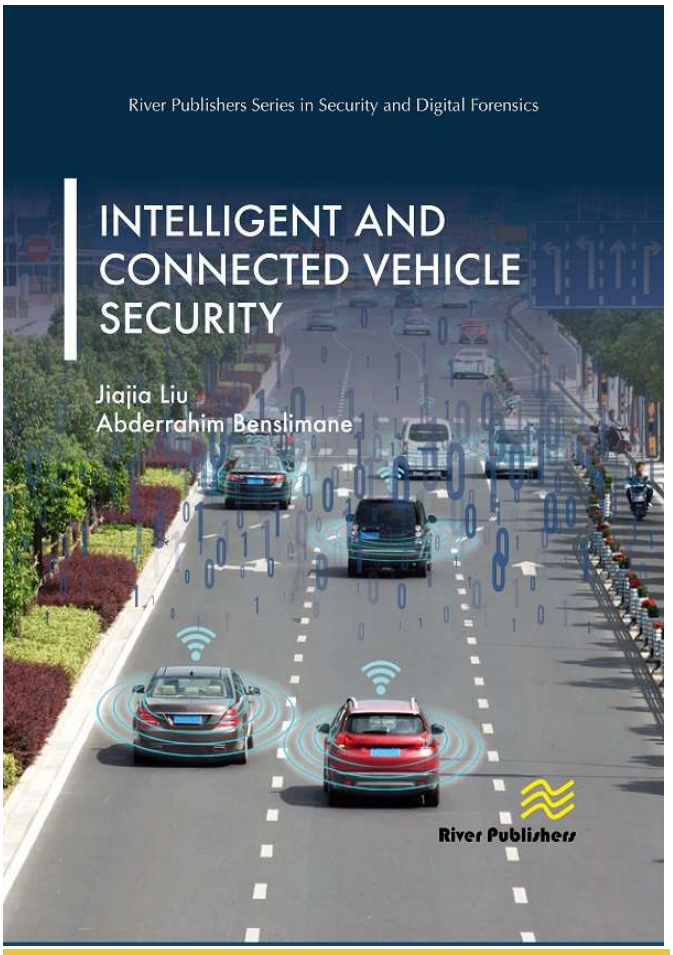
Intelligent and Connected Vehicles (ICVs) are moving into the mainstream of the worldwide automotive industry. A lot of advanced technologies, like artificial intelligence, big data, millimeter wave radar, LiDAR and high-definition camera based real-time environmental perception, etc., are increasingly being applied in ICVs, making them more intelligent and connected with devices surrounding the vehicles. However, although the versatile connection and information exchange among ICVs, external devices and human beings provides vehicles with a better and faster perception of surrounding environments and a better driving experience for users, they also create a series of intrusion portals for malicious attackers which threaten the safety of drivers and passengers. This book is concerned with the recognition and protection against such threats.

Security for ICVs includes information across the fields of automobile engineering, artificial intelligence, computer, microelectronics, automatic control, communication technology, big data, edge/cloud computing and others. This book comprehensively and systematically introduces security threats to ICVs coming from automotive technology development, on-board sensors, vehicle networking, automobile communications, intelligent transportation, big data, cloud computing, etc. Then, through discussion of some typical automobile cyber-attack cases studies, readers will gain a deeper understanding of the working principle of ICVs, so that they can test vehicles more objectively and scientifically. In this way they will find the existence of vulnerabilities and security risks and take the corresponding protective measures to prevent malicious attacks. Technical topics discussed in the book include but are not limited to:

- Electronic Control Unit and Vehicular Bus Security
- Intra-vehicle Communication Security
- V2X Communication Security
- VANET Security
- Unmanned Driving Security and Navigation Deception



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