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	Sommario/riassunto	Electrification, automation of vehicle control, digitalization and new mobility are the mega-trends in automotive engineering, and they are strongly connected. While many demonstrations for highly automated vehicles have been made worldwide, many challenges remain in bringing automated vehicles to the market for private and commercial use. The main challenges are as follows: reliable machine perception; accepted standards for vehicle-type approval and homologation; verification and validation of the functional safety, especially at SAE level 3+ systems; legal and ethical implications; acceptance of vehicle automation by occupants and society; interaction between automated and human-controlled vehicles in mixed traffic; human–machine interaction and usability; manipulation, misuse and cyber-security; the system costs of hard- and software and development efforts. This Special Issue was prepared in the years 2021 and 2022 and includes 15 papers with original research related to recent advances in the aforementioned challenges. The topics of this Special Issue cover: Machine perception for SAE L3+ driving automation; Trajectory planning and decision-making in complex traffic situations; X-by-Wire system components; Verification and validation of SAE L3+ systems; Misuse, manipulation and cybersecurity; Human–machine interactions, driver monitoring and driver-intention recognition; Road infrastructure measures for the introduction of SAE L3+ systems; Solutions for

interactions between human- and machine-controlled vehicles in mixed traffic.