Назва	**Cost-Effective Software and Hardware Complex to Ensure Security Against Unauthorized Use of Enemy Commercial Uavs on the Combat Territory**
Друга назва	Економічний програмно-апаратний комплекс для забезпечення безпеки від несанкціонованого використання комерційних БПЛА противника на території бойових дій
Автори	Pohasii, S., Milevskyi, S., Bilotserkivskyi, O., Baranova, V., Ippolitova, I., Pyvavar, I.
Ключові слова	• unmanned aerial systems, • remote identification, • security, • commercial UAVs, • detection system
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Реферат	Abstract: The rapid development in unmanned aerial systems (UAS) has raised concerns about security in both civilian and military domains. Remote identification of UAS, crucial for ensuring legality and ownership verification in real-time, poses challenges. This article explores the improvement of software and hardware complexes to counter the unauthorized use of enemy commercial UAVs on combat territories. Different data transfer protocols used by UAS, such as MAVLink, DJI OcuSync, Lightbridge, Datalink, and LTE/4G/5G, are compared based on their technical characteristics. The article highlights the vulnerabilities in identity forgery that can compromise privacy and operational security, emphasizing the need for robust remote identification systems. It discusses controversies surrounding DJI's DroneID protocol and the utilization of the DJI AeroScope Monitoring System. The limitations and problems associated with existing hardware solutions are addressed, and the benefits of using budget-

	friendly equipment for combatting dual-purpose commercial UAS are highlighted. The proposed detection system offers cost-effectiveness, scalability, mobility, and adaptability to counter evolving enemy UAS control methods, ensuring improved security on the front lines.
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