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Наведені матеріали конференції охоплюють основні напрямки розвитку в області інформацйіонних систем управління; інтелектуальних систем і аналізу даннях; моделювання та розробки програм.

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The collection contains materials accepted by the organizing committee for participation in the International Scientific and Practical Conference "INFORMATION CONTROL SYSTEMS AND TECHNOLOGIES" (ICST-ODESSA-2023).

The materials of the conference cover the main directions of development in the field of artificial intelligence, development and analysis of big data, blockchain and crypto technologies, control systems in robotic systems, data security and cryptography, ICT in the network and administration, information systems and technologies in Data Mining, intelligent technologies management, mathematical modeling, methodology and didactics of teaching and using ICT, application development, project management. system analysis, software development.

Conference materials are presented in the following sections:

- Information control systems
- Intelligent systems and data analysis
- Modeling and software engineering

The conference materials were reproduced from the author's originals. The organizing committee of the conference expresses gratitude to all the participants of the conference and hopes for further fruitful cooperation

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METHOD FOR WIRELESS IMAGE TRANSMISSION UTILIZING NEURAL NETWORKS

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МЕТОД БЕЗДРОТОВОЇ ПЕРЕДАЧІ ЗОБРАЖЕНЬ З ВИКОРИСТАННЯМ НЕЙРОМЕРЕЖ

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Abstract. *This paper proposes an optimized approach for image transmission from Unmanned Aerial Vehicles using split autoencoders and super-resolution techniques. The autoencoder, partitioned between the UAV and receiver, compresses and reconstructs images, saving energy and bandwidth. Super-resolution methods are applied at the receiver to counter quality loss from compression, enhancing the reconstructed images. The combined approach improves image transmission efficiency and quality, suggesting considerable enhancements for UAV-based remote sensing and monitoring applications.*
Keywords: *UAV, wireless networks, encoder, decoder, CNN*

Анотація. *У цьому документі пропонується оптимізований підхід для передачі зображення з безпілотних літальних апаратів з використанням розділених автокодерів і методів надвисокої роздільної здатності. Автокодер, розділений між БПЛА та приймачем, стискає та реконструює зображення, заощаджуючи енергію та пропускну здатність. Методи надвисокої роздільної здатності застосовуються в приймачі для запобігання втраті якості від стиснення, покращуючи реконструйовані зображення. Комбінований підхід покращує ефективність і якість передачі зображення, пропонуючи значні вдосконалення програм дистанційного зондування та моніторингу на основі БПЛА.*
Ключові слова: *БПЛА, бездротові мережі, кодер, декодер, CNN*

The use of unmanned aerial vehicles (UAVs), commonly known as drones, has become increasingly popular in recent years. These versatile and

manoeuvrable devices have been used in various applications, from commercial uses such as delivery of goods and aerial photography to more important tasks such as surveillance, disaster relief and environmental monitoring.

One of the most important uses of UAVs is to collect data, especially visual data, which can provide valuable insights into various phenomena.

Transmitting high-quality images from UAVs over wireless channels can be challenging, however. High-dimensional image data generated by UAVs can be large and difficult to transmit efficiently, especially over wireless networks. To solve this problem, researchers have proposed an optimised approach to UAV image transmission using split autoencoders and ultra-high-resolution techniques.

The proposed approach primarily uses a split auto-encoder, where the encoder is installed on board the UAV and the decoder is located at the receiving end (Fig.1).

The encoder significantly reduces the size of high-dimensional image data by converting it into a compact, lower-dimensional representation of the hidden space, or "latent space".

However, compressed images suffer from a certain loss of quality when they are restored by the decoder. To solve this problem, ultra-high-resolution methods were introduced. Using techniques such as SISR and GAN. Essentially, it learns to match low-resolution images with their high-resolution counterparts [1].

The proposed approach has several advantages for commercial and mission-critical UAV applications. Using split autoencoders and ultra-high-resolution techniques, high-quality images can be efficiently transmitted over wireless channels.

This can be particularly useful for real-time aerial surveillance, remote sensing and other applications that require high-quality images to be transmitted from UAVs.

The approach can also help reduce the power consumption of UAVs, which can extend their flight time and increase their operational range. In addition, the approach can help reduce the bandwidth requirements for image transmission, which can be particularly important in situations where network bandwidth is limited or expensive [2].

In conclusion, the proposed approach for UAV image transmission using split autoencoders and ultra-high-resolution techniques is a valuable contribution to the field of image transmission.

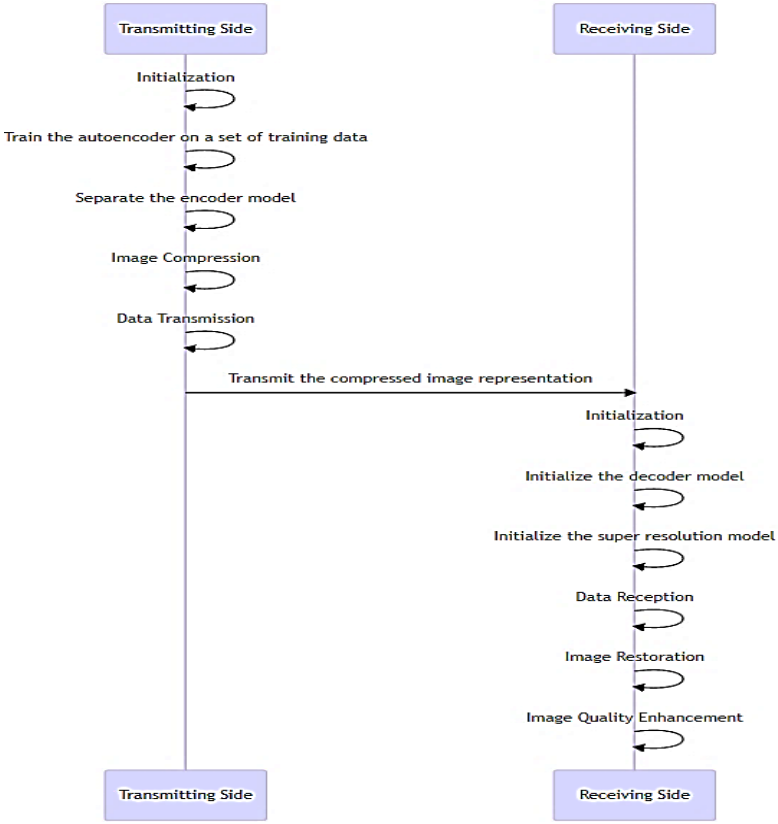

Figure 1. *The block diagram of the method for wireless image transmission utilizing neural networks*

It has the potential to significantly improve the efficiency and quality of UAV image transmission, which could have significant implications for real-time aerial surveillance, remote sensing and many other applications. With more data and training, the system can be continuously improved, making it an exciting area of research.

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SYSTEM OF NEURAL NETWORK IDENTIFICATION OF SHIP STEAM BOILER PARAMETERS

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СИСТЕМА НЕЙРОМЕРЕЖЕВОЇ ІДЕНТИФІКАЦІЇ ПАРАМЕТРІВ СУДНОВОГО ПАРОВОГО КОТЛА

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Abstract. *According to the results of the experimental analysis, a parametric model is obtained based on the observed input and output signals.*
Keywords: *parametric model, ship's steam boiler*

Анотація. *За результатами експериментального аналізу отримано параметричну модель на основі спостережуваних вхідних і вихідних сигналів.*
Ключові слова: *параметрична модель, судновий паровий котел*

The necessary step in solving problems of controlling nonlinear dynamic systems is obtaining their adequate mathematical models.

This process is based on theoretical or experimental analysis of the properties of these systems.

According to the results of the experimental analysis, a parametric model is obtained based on the observed input and output signals.