

COMPARATIVE ANALYSIS OF NEURAL NETWORKS-TRANSFORMERS IN SOLVING THE PROBLEM OF AUV MISSION GENERATION

A.S. Pugachev, A.I. Borovik

The article discusses the task of automating the generation of mission programs for autonomous underwater vehicles (AUV) using neural networks. The main focus is on choosing the optimal model for converting commands in natural language into code in a specialized underwater research programming language (URPL). LLaMA 3.1 8B-instruct, Gemma 2 9B IT, Mistral 7B-instruct, Qwen 7B-instruct, Phi-4 3.8B models are compared according to the criteria of generation accuracy, execution speed, resistance to errors in input data and compactness of the model when solving the given problem. The analysis results showed that the LLaMA 3.1 8B-instruct and Phi-4 3.8B models demonstrate the best performance. However, LLaMA 3.1 stands out for its higher processing speed (56.08 tokens per second) and the ability to correctly interpret commands, which makes it preferable for the tasks of generating AUV missions. To improve the accuracy and adaptability of the model, an approach to additional training of the neural network on an extended dataset created using more powerful language models is proposed.

Keywords: AUV, neural networks, mission, AUV mission programming language, URPL.

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Information about authors

PUGACHEV Andrey Sergeevich, Postgraduate student, engineer at the laboratory of robotic systems
Institute of Marine Technology Problems, Far Eastern Branch of Russian Academy of Science
Address: Russia, 690091, Vladivostok, Sukhanova str., 5A
E-mail: pugachev@marine.febras.ru
Phone: +7(423)2-215-545, ext. 512

BOROVIK Alexey Igorevich, Candidate of Technical Sciences, Leading Researcher, Head of the Laboratory of Robotic Systems
Institute of Marine Technology Problems, Far Eastern Branch of Russian Academy of Science
Address: Russia, 690091, Vladivostok, Sukhanova str., 5A
E-mail: alexey@borovik.me. **Phone:** +7(423)2-215-545, ext. 509
ORCID: 0000-0002-9696-2751