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Main Tasks of Training and Results of Activity of the ISS Crew for Expedition 54/55 When Carrying out the Mission Plan.

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The paper considers results of the ISS-54/55 crew activity aboard the Soyuz-MC-07 spacecraft and the ISS. The tasks solved when performing extravehicular activity are reviewed.

Keywords: tasks of crew training, spaceflight, International Space Station, scientific applied research and experiments.

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Medical Aspects of Ensuring Safety of the Flight of the ISS Crew for Expedition 54/55 (Express Analysis)

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Abstract. The paper shows the results of medical maintenance of the ISS-54/55 expedition and gives a brief description of operation of the medical support system and maintaining the stability of human environment aboard the ISS RS. Besides, the paper sums up results of implementing medical recommendations, program of medical monitoring and the use of onboard means designed to prevent the alteration of cosmonauts' health status in spaceflight.

Keywords: medical support, medical monitoring, preventive system, human environment, work/rest schedule.

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The Features of Implementation of Processing, Displaying and Recording Multimedia Data for the Simulator Complexes at the CTC.

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Abstract. The paper discusses the features of the hardware configuration and software solutions on processing, displaying and recording video and audio data for the CTC's simulator complexes that allow executing the tasks of information support, control and analysis of cosmonaut training process efficiently.

Keywords: simulator complexes, multimedia data, mixer-switch, monitoring, video recording, data displaying, real-time scale.

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Mobile Space Robot Control with the Use of Virtual Reality.

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Abstract. The paper considers the problem of controlling a mobile space robot using a multimodal interface based on virtual reality. A variant of a multi-layer virtual environment with various interactive elements intended for the construction of the robot motion trajectories is considered

Keywords: mobile robot, virtual reality, induced environments, multimodal interfaces.

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Revisited the Configuration of Space Greenhouse for Manned Space Vehicles.

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Abstract. The paper discusses various options for space greenhouses to enrich the cosmonauts’ diet with fresh vitamin greens. The advantages of space greenhouses with higher plants as compared with installations for germinating cereals and microalgae cultivators are substantiated. In a number of designs of domestic and foreign greenhouses, capable of operating in space flight conditions, two main classes are distinguished: with flat and convex planting surfaces. A comparison between the constructional and operational characteristics has revealed the advantages of a conveyor space greenhouse with the cylindrical planting surface for growing vegetable crops aboard a manned space vehicle.

Keywords: manned spacecraft, space greenhouse, cylindrical planting surface, vegetable crops.

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Shooting of the Earth's Surface From the Board of Manned Space Vehicles (1961–1964): From a Motion Picture Camera to a Still Camera

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Abstract. Monitoring and photographing of the Earth's surface were the essential part of the scientific observations program carried out by the crews of the "Vostok" spaceships. These observations were continued during the 24-hour flight of the three-man “Voskhod-1”. The paper describes the main technical devices for observing and surveying the Earth's surface during flights of the "Vostok" and “Voskhod-1” and considers the main results and conclusions made on the basis of an analysis of the obtained photo and video materials.

Keywords: shooting of the Earth's surface, photographing in space, filming in space, manned space flights, space photographic equipment, history of manned space exploration.

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Multimodal Interfaces for Service Robots (Analytical Overview).

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Abstract. Robotic platforms equipped with a multimodal interface are considered. Some trends of applying various channels of information exchange with the user are analysed depending on the scope of robot application. The current situation is that the robots with a multi-modal interface are practically not used in such domains as logistics, farming, medicine, and, with certain reservations, in defense and space technologies. At the same time, the special features of the three latter spheres make it necessary to use rarely applied strategies of human-machine interaction.

Keywords: multimodal interfaces, robotics, assistive technologies, service robots, collaborative robotics, space robots, human-machine interaction, robotization.

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At the Origins of Russian Space Legislation.

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Abstract. The Law of the Russian Federation “On Space Activities” came into force on August 20 and was published on October 6, 1993. Thus, the starting point was created and the fundamental principles of the legal regulation of space activities in Russia were laid. The paper chronicles the drafting of the bill, reviews the events and discussions preceding the adoption of the first Russian «space» law.

Keywords: Law, space activities, space law, legal regulation, Supreme Council, President of the Russian Federation, Russian Space Agency, Moscow Space Club.

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Results of the Open Competitive Cosmonaut Selection of 2017–2018.

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The paper considers preliminary results of the second open cosmonaut selection for the cosmonaut corps of the “Roscosmos” State Corporation, conducted in the Russian Federation.

Keywords: cosmonaut corps, cosmonaut selection, “Roscosmos” State Corporation.

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