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PROPOSAL ON R&D COOPERATION
(System for Autonomous Control and Effectiveness Monitoring of a Solar Plant)

Contact: Vital Asipovich, PhD,
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Expertise:

Dr. Vital Asipovich focuses on Big Data technologies, neural networks, and deep learning technologies. He has recently developed a software tool that can automatically process digital images that were collected after a computer tomography of an individual's damaged facial bones, and can calculate the volumes of the soft tissue and bone orbits, as well as the degree of dystopia (hypophthalmos, enophthalmos, exophthalmos) of the damaged eye. In solving this problem, both linear algorithms and neural networks were used.

Moreover, the Department of Human Engineering and Ergonomics is organizing the International Conference on Big Data and Advanced Analytics (www.bigdataminsk.by, annually since 2015). We are pleased that Prof. Mandfred Glesner (IEEE Fellow, TU Darmstadt), Prof. Valery Sklyarov (Aveiro University), Dr. Abzetdin Adamov (SM-IEEE, Director of Center for Data Analytics Research, ADA University), Igor Trubin (Capital One Bank), and Dominique A. Heger (PhD, Founder of DHTechnologies, Data Analytica, Hotshot Analytics and AI/ML company) are regularly participating in the conference as invited speakers and organizing committee members.

Research topics which could be of mutual interest:

Dr. Vital Asipovich is currently looking for partners (universities, research institutions, solar plants, private companies) who are interested in the development and approbation of an information system for autonomous control and effectiveness monitoring of a solar plant. Such a system is supposed to be based on the digital (virtual) twin technology that will enable to autonomously search for system malfunctions, assess the efficiency of the solar panels and support decision-making process. The digital twin system of the solar plant comprises three components: a living mathematical model, big data analytics engine, and AI knowledge engine.

Such an information system is supposed to be able to collect and process the operation data of the solar plant autonomously, analyze its efficiency parameters, detect malfunctions, create system status reports, and formulate recommendations about required maintenance actions.

Latest publications:

V.S. Asipovich et al. Deep Learning in Processing Medical Images and Calculating the Orbit Volume. 4th International Conference on Nanotechnologies and Biomedical Engineering "ICNBME 2019", IFMBE Proceedings, vol 77. *Springer*, Cham, pp. 519-522 (2019). DOI: 10.1007/978-3-030-31866-6_93.

V. Asipovich et al. Digital Twin in the Analysis of a Big Data. Big Data and Advanced Analytics: collection of materials of the fourth international scientific and practical conference, *BSUIR*, pp. 69 – 78 (2018). Link to e-article.

A. Radnionok, V. Asipovich, et al. Algorithm of Processing Microspiral CT-SCAN Results for Constructing a Three-Dimensional Model of Orbit Thin Bones. *Journal of Engineering Science*, XXV (4), pp. 39–46 (2018). DOI: 10.5281/zenodo.2576735.

V. Osipovich et al. Processing of Large Amounts of Information for Reconstructive Facial Surgery. Big Data and Advanced Analytics: collection of materials of the fourth international scientific and practical conference, *BSUIR*, pp. 89-97 (2016). Link to e-article.