Boris Stilman

University of Colorado & Stilman Advanced Strategies, USA

From Primary to Conventional Science

In this talk, I will introduce our hypothesis about the structure of the Primary Language of the human brain, which goes back to J. von Neumann who hypothesized its existence in 1957. According to von Neumann, the Primary Language should have empowered all the Secondary languages, i.e., human symbolic languages and sciences. I will explain how this is accomplished with introduction of the Language of Visual Streams. This talk includes the details of communication between the primary and conventional languages and sciences and demonstrates examples of such communication. The science visual streams may generate new knowledge because they include the discovery streams controlled by the Algorithm of Discovery (AD). We assume that there exists a universal AD, the ultimate tool utilized by the human brain for discovering new algorithms and perfecting the existing ones. The AD makes discoveries via visual streams within the primary science and then reflects them in the secondary science, the conventional one. One of the goals of our research is to understand the AD to the level, which will permit producing discoveries on demand. Two examples of discoveries rediscovered employing the simulated AD are included in the talk. Each example consists of a series of thought experiments that turn a piece of the primary science to the conventional one. Those examples include discovery of the formulas of differentiation (by Newton and Leibnitz) and discovery of the Double Helix, the structure of DNA (by Watson and Crick).

Biography

Boris Stilman received MS in Mathematics from Moscow State University, Russia, in 1972, and two PhDs in Electrical Engineering and Computer Science from National Research Institute for Electrical Engineering, Russia, in 1984. Based on his 17-year experience in the research project PIONEER led by a former World Chess Champion Professor Mikhail Botvinnik, Dr. Stilman developed Linguistic Geometry (LG), a new theory for solving abstract board games. In 1991-2018, Dr. Stilman was developing the theory and applications of LG at the University of Colorado. A leap in the development LG was made in 1999, when he (with a group of scientists and engineers) founded STILMAN Advanced Strategies, LLC. A growing number of applications of LG developed at STILMAN passed comprehensive testing and powered intelligent defense systems around the world. In 2010, Dr. Stilman broadened the scope of his research on intelligent systems via investigating the structure of the Primary Language of the human brain.

Dr. Stilman published several books and over 200 research papers. He is a recipient of numerous R&D awards including those from the US government agencies such as DARPA and major companies such as Boeing.

International Journal of Robotics Research
Applications and Automation

Robotics 2019
October 23-24, 2019

Volume 01

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