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Holistic Analysis and Management of Distributed Social Systems

An advanced approach for analysis of large social systems will be described which may have effective implementation on a variety of platforms with using special or existing media systems and channels. Social systems and social networks expressing them may be very large and complex, covering countries or the whole world and consisting of millions to billions of nodes and different links between them. They may be constantly changing their volume and structure thus adequately reflecting evolving world attitudes and situations. Seeing and understanding such systems, especially at higher organizational levels, and properly managing them is crucial for world's prosperity and security. Traditional centralized access, copying, and visualization of social networks may not fulfil the expectations, and this may also require unacceptable amounts of time, storage and computing resources. The obtained network snapshots might quickly become outdated as the corresponding situations in the dynamic world could have already gone. The really valuable solutions may be obtained by distributed, parallel, and runtime dealing with social networks massively, jointly, and directly in multiple points where the information originates, with using existing and numerous distributed facilities in parallel. But we may need highly advanced networking technologies that can provide integral, holistic vision of large social networks, with the current book just aiming at these. A real inspiration for finding high-level solutions in large social networks is gestalt-psychology and theory considering human brain as having unique capability of directly grasping the whole of phenomena, while interpreting parts as derivatives of this whole rather than vice versa. That is why we will be using a modified high-level Spatial Grasp Technology (SGT) already tested on numerous networked & mobile applications and described in previous Wiley and Springer books, and allowing us to find gestalt-based solutions in distributed systems by treating the whole world as an integral brain comparable in capabilities to a human brain, even exceeding it in numerous applications. This spatial brain in the current project will be formed by Social Analysis Device (SAD) modules based on SGT, which can be implanted into sensitive points of social tissue (on agreements or in a stealth manner, depending on applications and permissions) and capable of communicating with each other, especially massively and wirelessly. Dynamic SAD networks (mobile nodes including), which can be large (up to thousands to millions nodes) and deeply implanted into social networks (being actually their integral parts themselves), can collect and extract important, peculiar, and sensitive information on social events, feelings, and aspirations, also discover and analyse different kinds of distributed social infrastructures, which may be benign or malicious. This is achievable by self-evolving, self-growing, self-replicating and self-spreading patterns written in a special recursive language, which can be applied from any SAD modules while creating higher-level holistic operational and awareness infrastructures dynamically covering and matching the social areas of interest in a globally controlled and viral mode. By using distributed SAD networks directly accessing the freshest social information in numerous places it is possible to simulate and predict different developments of social systems under realistic or hypothetical circumstances, also launch controlled local and global social experiments. The project can be useful for solving a variety of social problems emerging on national and international levels -- from welfare to security to terrorism fight to international relations and diplomacy, also in the study and influence of national, international, and global psychology. Special attention will also be paid to the SAD-based solutions of other important problems directly or indirectly influencing social welfare like future transportation infrastructures with multiple driverless cars and advanced road traffic management, global security issues related to critical infrastructures protection and integrated air and missile defence, and also unified evolution of human-robotic societies, with concrete solutions in these areas. Concerning gestalt theory itself the book is planned to make certain contribution to it too, like formalizing existing laws of proximity, similarity, closure, symmetry, common fate, continuity, good gestalt, and past experience in a special high-level language -- to enable

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them operate in distributed and parallel environments and not only in a single human brain (with other possible, more diverse and complex laws to be offered and formalized too). This will enable the great ideas of gestalt to be used in a much broader scale than traditional psychology and psychiatry. The proposed advanced social analysis and management approach is expected to fully operate under the existing legal, cultural, and ethical norms and regulations, national as well as international.

Biography

Peter Sapaty, Chief Research Scientist, Ukrainian Academy of Sciences, is with networked systems for five decades. Except Ukraine, worked in Czechoslovakia, Germany, UK, Canada, and Japan as group leader, Alexander von Humboldt researcher, and special invited, invited and visiting professor, also created and chaired SIG in Distributed Interactive Simulation project in the US, being its steering committee member. Invented distributed control technology resulted in European patent and Wiley and Springer books, published about 200 papers on distributed system organizations. Regularly served as workshop organizer, sessions chair, keynote and invited speaker at scientific and defence conferences in different countries. His bio is in Marquis Who's Who in the World and Cambridge Outstanding Intellectuals of the 21st Century. Peter is also engaged in different international scientific journals, as EIC including.

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