The data connection - challenges at the frontiers of Artificial Intelligence research

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The quest to develop artificially intelligent machines that exhibit the behaviour of their biological counterparts has yielded decades of inspired investigation. Recently, a number of significant outcomes have been proffered in the domain of "Artificial Intelligence" research, however despite tremendous progress in the field, a number of challenges still remain.
These include the inherent difficulties in replicating the biological complexities of the human brain, but also relate to the practical problems of having rapid and convenient access to real-world data, the ability to effectively manipulate process and classify unknown records, as well as the efficient management of large quantities of categorised information. This presentation explores the groundbreaking developments in the areas of computer vision, automated pattern recognition and artificial intelligence in the context of real-world problems that are underpinned by the need to apply large volumes of accurate data for training and processing.
A number of applications are presented including research into intelligent on-line water quality monitoring technology to ensure sustainable, safe supplies of freshwater across large-scale networks, in addition to the development of automatic systems for monitoring the activities of visitors at our beaches and coastal zones, as well as technologies for preventing the deterioration and collapse of bridges, and finally software that can be used for the early diagnosis and treatment of such brain disorders as Parkinson's disease. Further discussion is dedicated to the future data and resource requirements of artificial intelligence research, implications of the National Broadband Network roll-out, and finally possible directions for attaining the goal of conscious machines.