Automated detection of early schizophrenia

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The opinion of a qualified professional is unlikely to be replaced by a computer algorithm for the diagnosis of schizophrenia. However, additional medical evidence based on such an algorithm might be useful in early diagnosis, according to work published in the International Journal of Intelligent Systems Technologies and Applications.

Pawan Kumar Singh and Ram Sarkar of the Department of Computer Science and Engineering, at Jadavpur University, in West Bengal, India, explain how expert systems, usually reserved for problem solving, might also be useful in medical diagnostics, particularly in psychiatry. They explain how schizophrenia is such a complex and debilitating mental disorder with a wide spectrum of symptoms, reflecting cognitive, emotional, perceptual disturbances as well as problems with motor processes.

As such, it is usually a complete psychiatric examination that is used in diagnosis. However, an expert system that could spot the early onset of disparate symptoms might lead to a more timely referral for a patient and allow treatment to be offered sooner rather than later to the benefit of the patient and any carers involved in their welfare.

The team explains that AI (artificial intelligence) computer programs that achieve expert-level competence in solving problems by bringing to bear a body of knowledge about specific tasks are called knowledge-based or expert systems (ES). An ES comprises two main components: a knowledge base containing facts from a particular field and a reasoning, or inference, engine that uses logical relations to process inputs by

working with the information in the knowledge base. The initial studies help process reported and identified symptoms, such as delusion, hallucinations, compulsions, poverty of speech, catatonia, inability to cope with minor problems and many more.

"Treatment of schizophrenia depends largely on medications and on psychosocial interventions," the team emphasizes. "No single approach is widely considered effective for all patients," they add. An expectation of recovery from schizophrenia is a concept that has evolved to a remarkable degree during the past century or so but the earlier the diagnosis the better.