The Computer System GRAPHOGRAPH

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The aim of this talk is to draw the attention of the scientific community to an ambitious project to develop multi-purpose software for graph theory. The basic idea of this computer system is to verify graph-theoretic properties for sets of graphs. A user specifies a property using a simple Formalised Graph Language. No programming skills are required. The next step is to specify a graphbase, a set of graphs that can be chosen either randomly or from a huge built-in database of graphs, or specified by the user in Graph Editor. A computer then verifies the property for each graph from the graphbase and constructs a new set consisting of graphs satisfying the property. The resulting set of graphs is visualised and can be analysed by the user. One of the possible applications of this computer system is to verify whether a certain conjecture is true for all graphs of small order. The software would also be helpful in proving theoretical results. Some examples will be demonstrated during the talk. In order to provide the ability to specify a wide range of graph properties, a bank of basic graph algorithms will be developed. To achieve this, the algorithmic part of the project is divided into modules designed for different branches of graph theory. Any graph theorist interested in taking part in developing one of the modules is invited to co-operate (please contact: vadim.zverovich@uwe.ac.uk). All such developers will become co-authors of the software.