

## Automated Conjecturing and Collaborative Mathematics

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The Graph Brain Project is an experiment in how the use of automated mathematical discovery software, databases, large collaboration, and systematic investigation provide an experimental model for collaborative mathematics, with mathematicians and students of varying backgrounds. During the summer of 2017, a group of high school students, undergraduates, graduate students, and faculty made use of a program capable of generating invariant-relation and property-relation conjectures in many areas of mathematics. While this program is remarkably general (and, open source!), we used this program to generate conjectures related to the independence number of graphs. In this talk, we discuss the sort of conjectures the software makes, how to remove false conjectures, and, consequentially, how to generate better conjectures in (nearly) real time.

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