



**Davidson Fellow
Boris Alexeev**

(\$25,000 Scholarship Recipient)



Personal Info

Boris Alexeev

Age: 17

Athens, GA

School, College and Career Plans

A graduate of Cedar Shoals High School, Boris received the support of Georgia's Postsecondary Option program, which allowed him to attend the University of Georgia as a high school junior and senior. With his perfect ACT and SAT scores, he will attend MIT in the fall and plans to double-major in mathematics and computer science.

Davidson Fellows Submission (*Mathematics*)

In his project titled "Minimal Space DFA's for Testing Divisibility," Boris Alexeev proved a theorem related to the theory of automata, the mathematical basis for the field of pattern matching. Boris worked to determine the easiest way to test divisibility by a number using automata. By studying the minimization of automata, programs can be simplified, thereby allowing them to use less memory and operate faster. Boris' findings can be utilized in a range of fields, such as DNA research and computer science.

Biography

Boris immigrated to the United States from Russia at age four and enrolled in an accelerated kindergarten program, skipping the first grade.

In eighth grade he participated in Mathcounts because his middle school had, and still has, a dedicated teacher who works with "mathletes" every day. After completing geometry in eighth grade, Boris took AP Calculus as a freshman, then completed all of his math courses at the University of Georgia for both high school and college credit. His program of study included many upper-level mathematics courses, including a graduate course in analytic number theory.

The initial interest in his quest to prove the theorem arose during an introductory course on theoretical computer science at the University of Georgia. The question stems from a standard problem posed in many introductory theoretical computer science textbooks and had been previously unanswered.

Boris is an avid rock climber, although he no longer competes. He also enjoys ultimate frisbee, music, black currant sorbet, foosball, Perl, air hockey, and philosophizing.

Please see next page.



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(Cont.)

Honors/Awards

- 2004 Davidson Fellow
- 2004 USA Computing Olympiad, US Open, Fourth Place in US
- 2004 Siemens-Westinghouse Science Competition, Semi-Finalist
- 2004 Intel Science Talent Search, Second Place, \$75,000 scholarship
- 2004 International Olympiad in Informatics US Team, Alternate
- 2003 International Olympiad in Informatics US Team B, Unofficial Bronze Medal
- 2003 USA Mathematical Talent Search Grand Prize Winner
- 2003 American Mathematics Competition, Perfect Score (150)
- 2003 USA Computing Olympiad, US Open, Sixth Place in US
- 2002 American Mathematics Competition, Highest Score (144) in Georgia
- 2002 Clemson Declamation Contest, French, First Place
- 2002 USA Mathematical Talent Search, Grand Prize Winner
- 2002 UGA Kossack Calculus Prize, First Place
- 2001 USA Mathematical Talent Search, Grand Prize Winner
- 2001 Clemson Declamation Contest, French, First Place

Community Activities

Boris shows his love of mathematics through his involvement in community efforts to increase interest in the subject. He has helped organize the University of Georgia High School Math Tournament, a competition that strives to show eager students interesting, multi-faceted aspects of mathematics.

In addition, Boris has helped the Georgia American Regions Math League team for five years in several ways, including advising on technical matters and training page organization.

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