ALGORITHMIC COMBINATORICS ON WORDS

Research Experiences for Undergraduates

This Research Experiences for Undergraduates program entitled Algorithmic Combinatorics on Words is on interdisciplinary research at the crossroads between Mathematics and Computer Science The University of North Carolina at Greensboro will provide unique opportunities for summer research for ten outstanding and highly motivated students for an eight-week period (June 7–July 31, 2010). Participants will work in small teams under the supervision of Professor Francine Blanchet-Sadri and in consultation with expert programmers.

Students will be introduced to various challenging algorithmic combinatorial problems on partial words, which are sequences of symbols over a finite alphabet that may contain some "do not know" symbols Two types of research opportunities will be emphasized:

1 **computer related research**, with students writing programs to perform experiments on partial words and to implement algorithms; and
2 **combinatorics related research**, with students investigating properties on partial words to generate conjectures, to prove theorems, and to discover algorithms

Students will be exposed to the techniques of language theory since this is a natural framework for formalizing and investigating sequences and operations on them Students will gain experience in the use of computers and their interaction in mathematical research. In addition, students will establish World Wide Web server interfaces for automated use of the programs related to our combinatorial algorithms

NSF support through this REU program is open only to undergraduate students who are, at the time of application, citizens or permanent residents of the United States or its possessions Support is intended for students whose undergraduate study is in Mathematics and/or Computer Science. In most cases, a student has three opportunities to apply: during the sophomore or junior year of college, or during the beginning of the senior year of college (Spring 2010 graduates will not be eligible). The ideal candidate for this project would have taken a wide variety of upper-level mathematics and/or computer science courses including some of the following: Discrete Mathematics, Combinatorics, Algorithms, Theoretical Computer Science, and Programming The program involves extensive computer programming and requires some experience using a language such as Java. Admission will be competitive and based on motivation, strength of the academic record, and letters of recommendation. Students admitted to this program will be given a $5,000 stipend. There will also be allowances available for travel depending on distance from Greensboro, housing, and participation in a national/international meeting or conference. This will be an intense program, and students should not plan to engage in other activities during its duration

Students should send a completed application form to
Professor Francine Blanchet-Sadri,
167 Petty Building,
University of North Carolina,
P.O. Box 26170,
Greensboro, NC 27402–6170

Deadline for applications is
February 21, 2010

A World Wide Web site has been designed at
http://www.uncg.edu/cmp/reu
that contains current information about the program
For any additional information, contact Professor Francine Blanchet-Sadri
by phone at (336) 256–1125 or via email at blanchet@uncg.edu