

Students At Work

The Natural Sciences and Engineering Research Council of Canada (NSERC) is the national body in Canada that strategically invests in the country's scientific and technological capabilities. To stimulate student interest in research in the natural sciences and engineering, and to encourage graduate studies and research careers, NSERC offers Undergraduate Student Research Awards (USRA).

Xiao Su, a 3rd year Chemical Engineering student at the University of Waterloo, won one of these awards, for the first term at Rocscience this last summer.



This winter I completed my second co-op term at Rocscience. My project was a generalization from my work in the Summer 2008. The project involved the implementation of simulated annealing as a new method for searching for critical failure surfaces and factors of safety in Slide 5.0. Last summer, the method was successfully used to find circular failure surfaces. In addition, the work-report written for the project won the Sandford Fleming Foundation Award, given by the Faculty of Engineering for the best work-reports in each department.

This time, we have successfully extended the method for general, non-circular failure surfaces. During this co-op term, I had the opportunity to improve my programming skills and study the theoretical and practical aspects of non-convex optimization, especially the extension of global optimization to multi-variable problems. I also learned the principles of soil mechanics and slope stability analysis.

I worked under the excellent supervision of Rocscience's software development manager, Dr. Brent Corkum. By working closely with Dr Corkum and other Rocscience programmers and engineers, I obtained valuable experience in software development and professional programming practice. The co-op term at Rocscience was also a great personal time, as the workplace environment was very friendly and fun.

Returning to Rocscience gave me the opportunity to build on the experience gained in the first-term, as well as learn more advanced skills and thus tackle more challenging problems. Both my work terms at Rocscience have strengthened my professional skills and, most importantly, my interest in research. I am confident that the valuable experience gained will help me in my engineering career.