



DIMACS Highlight: Douglass-DIMACS Computing Corps

[November, 2013] The Douglass-DIMACS Computing Corps (DDCC) began its second year fueled by experience from last year and a new grant from AT&T Corporation to support and enhance ongoing activities.

A key goal of DDCC is to help close the gender gap that exists in computer science and related fields. Through this program, we hope to recruit and retain more women into computer science, computer engineering, and other computing-related majors at Rutgers and to inspire middle-school students in the local community to learn more about computing. DDCC is a partnership of DIMACS, the Douglass Project for Rutgers Women in Math, Science, and Engineering, and the Piscataway public schools.



2012 DDCC Members

DDCC focuses on helping women succeed in computing while providing them with the opportunity to give back to the community through leadership and mentoring. Throughout the year, undergraduate participants work with faculty and graduate students to design fun and interactive group activities to later use with middle school students to excite them about computing. DDCC follows a multi-layered mentorship and leadership model, with faculty and graduate students acting as mentors for the undergraduate students, who in turn lead the middle school students to discover the excitement of computing. This structure provides role models to female students at several different academic levels while simultaneously building communities of like-minded students within and across levels.

DIMACS Director Rebecca Wright is faculty advisor to DDCC, and she sees DDCC as playing a role in changing perceptions through information and exposure. She says, “Middle school students often think people either have a brain for computing or they don't. As a result, many students think they either have little interest in or little aptitude for computing, but we know that students can develop their skills in computing through practice. In many cases, if these students were to better understand what computing is and how varied its potential applications are, and if they were to see role models who are compelling to them, they may discover that they can develop both interest and aptitude. Through their outreach activities, DDCC undergraduates create a mechanism to interest the participating middle school students in computing, and they serve as real-world role models of students who are on a path to successful computing careers.”

DDCC aims to provide a supportive experience in computing to its undergraduate members so that they will choose and then thrive in a computing-related major, while also inspiring middle school students to remain open to pursuing related studies in college. DDCC is carried out as part of Rutgers participation in the STARS Computing Corps, a non-profit organization dedicated to building a larger and more diverse computing workforce. Members of the DDCC participated for the first time in the STARS Celebration, a yearly gathering of Corps from institutions across the country. Below is the poster presented by DDCC participants.



CS Outreach Amongst the Youth

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Douglass-DIMACS Computing Corps
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Introduction

Who are we?

The Douglass-DIMACS Computing Corps is a program to help women succeed in computer science and information technology. Supported by the STARS Alliance, and under the supervision of two computer science graduate mentors, we will plan and carry out lessons to educate middle school students in programs that lead to computing careers.

Our group consists of Douglass women from various computing fields, i.e. CS, ECE, ITI, and math.

Through our outreach program, we aim to increase awareness in computer science and related fields among the youth, by teaching various CS concepts, such as binary search.



DIMACS women at work creating lessons to teach middle school students.

Initiative

Why outreach?

Recently, the entrance rate of high school graduates in Computer Science has been decreasing, especially that of women.

•The Computing Research Association Taulbee Survey shows that less than 12% of CS graduates are women.

Plan

We modeled our lessons using various learning websites such as CSUnplugged. Our original plan was to create a continuous six week after-school program to teach the students in New Brunswick, a less educationally opportunistic district.

However, we were only able to execute six discontinuous lessons.

•Visual techniques, such as a Prezi

•Computer science related games to build interest amongst the students.

Impact

How did this resonate?

Through our school visits, we were able to directly impact the middle school students in the Piscataway school district.

•Students claimed to have learned more about CS and found it interesting

- "I didn't know it wasn't only things on the computer"
- "Yes, it seems interesting, fun and creative."
- "I wanted to go into medicine, but after this lesson I'd like to do CS with medicine."

Furthermore, during Rutgers Day, we were able to reach out to the families near the Rutgers Community and inform them about applications of Computer Science.



The Finch robot that was used to demonstrate how computer science at Rutgers Day. Visitors were allowed to change color and movement of robot.

Conclusions

This experience allowed us the ability to not only spread the knowledge of Computer Science and related fields, but it also gave us the opportunity to learn how to properly execute a lesson plan.

Future Work

In our next outreach attempt, we would like to improve on the following critiques we received from the students.

- "Have more topics to explore."
- "Less talking, more activities."

And continue the activities they enjoyed.

- Visual aids and hands on activities
- Games, Error Detection Magic Game, Binary Search



This is a preview of one of the Prezis used during the presentations.

DDCC poster presented at the 2013 STARS Celebration

Related links:

- DIMACS: dimacs.rutgers.edu/
- DDCC: dimacs.rutgers.edu/DDCC/
- STARS Computing Corps: www.starscomputingcorps.org/
- Douglass Project for Rutgers Women in Math, Science, and Engineering: <http://douglass.rutgers.edu/douglass-project-rutgers-women-math-science-and-engineering>