

Inside this issue:

Student Profile Guarav Jain, EE	1
Student Profile: Andrea Preininger, STAC	2
Fall 2007 Research Option Graduates	3
Grad Student Profile: Dooroo Kim, ME	3
3rd Annual Spring Symposium	4
Faculty Interview: Dr. James Gole	5
Faculty Corner	7

Check Out
the
Latest Info
about the
3rd
Annual
Spring
Symposium
(Page 4)

Student Profile: Guarav Jain, EE (ECON minor)

by Savannah Gowdy

Newer and better cell phone technologies help drive economic markets around the globe. So as a leading technology school, what can Georgia Tech do to improve the way these markets affect the world? Leave it to Guarav Jain, a senior electrical engineering major with an economics minor. His research career took off when he got involved through a senior economics elective. Dr. Klimenko, the course instructor, noted Jain's interest in the class topic and suggested to him research. Jain started to look into his research options. Dr. Klimenko along with Dr. Nair-Reichert had already discussed wanting to conduct research with the impact of licensing fees on developing countries, especially India. However, they had no funding for the research. Jain discovered

the Presidential Undergraduate Research Award (PURA) through the Undergraduate Research Opportunities Program (UIROP). "The PURA enabled me to conduct the research that interested me." Jain states, "Being an electrical engineering major; economics was not the most obvious specialization. Finance research gives me a different perspective for learning about electrical engineering and is an application of the class. Two-for-one." His mentors, Dr. Klimenko and Dr. Nair-Reichert, were a large part of his success. They both helped him in their free time by providing guidance, editing help, and information. His most valuable learning experience was that things are not always as they seem. He had once thought that economics was a straight forward field that rarely changed.



Now he sees that it is an ever changing field that constantly has new challenges and demands. The part of his research he favored the most was the opportunity of getting to work in India. As a native Indian, he knew some of the country's history, but through his work got to study the development and telecommunications market. "It was fulfilling. I may one day be able to help create positive international policy," he explained. Jain gained skills that will help him throughout, not only the rest of his school days, but in the workplace: the

Continued on page 7

Undergraduate Research News

Student Profile: Andrea Preininger, STAC

by Julie Kent

When most students think of undergraduate research at Georgia Tech, their ideas are likely in the fields of science and engineering like robotics, nanotechnology, and tissue engineering. But there is a lot more going on at Georgia Tech that doesn't involve lab coats and safety glasses. Andrea Preininger is a Science, Technology, and Culture major from Peachtree City, Georgia. When she heard about opportunities within the Ivan Allen College, she decided it could be a rewarding experience.

"I thought it would be really interesting to do a research project at a world renowned research institute like Georgia Tech," stated Preininger.

Preininger applied for the President's Undergraduate Research Award and teamed up with Dr. Jay Bolter, graduate students, and other professors to research mobile technologies and augmented reality. Their team worked with the Oakland Cemetery to help them use mobile technologies to facilitate the way they presented information to the

public. "My role was to find the information used in Dr. Bolter's design for the project. Basically, I would go to museums and historical centers as well as search the internet and read books to look up information used in the design," she said.

When asked about her professional relationship with Dr. Bolter, Preininger has only positive things to say: "My professional relationship with my mentor was great. We had very good communication and we were always on the same page. It really helps to have



good communication skills when dealing with someone in a professional atmosphere." In addition to having a great mentor to work with, Preininger stresses the importance of finding a research topic of interest to students pursuing undergraduate research, "If you are interested in the subject then you will appreciate the research

Continued on page 6

PURA

President's Undergraduate Research Award

Summer 2008 Applications due March 3



Apply for competitive \$1,500 salary awards or up to \$1000 funding to present your work at a professional conference

2007 Fall Research Option Graduates

Congratulations to the Fall 2007 graduates of the Research Option program!

- Thomas Amundsen, CS
Mentor: Ashwin Ram
- Ann Brauer, Psych
Mentor: Paul Corballis
- Kristin Johnson
Mentor: Facundo Fernandez
- Kathleen McNulty, Psych
Mentor: Dr. Phillip Ackerman
- Dmitriy Plaks, AE
Mentor: Dr. Tim Lieuwen

- John Roman, Psych
Mentor: Paul Corballis
- Christopher Vaughns
Mentor: Uwe Bunz
- Mark Youngblood, CmpE
Mentor: Jeff Davis

There are several benefits of participating in the Research Option such as special designation on your transcript, one-on-one research with Georgia Tech faculty, and a contribution to new

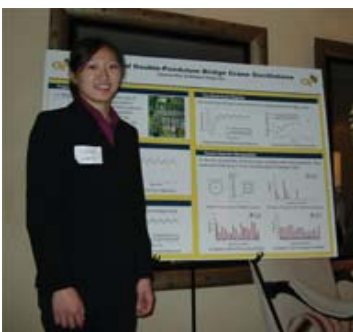
knowledge in your field. Currently, the Research Option is available in 16 schools. These schools include Computer Science, Aerospace, Biomedical, Chemical & Biomolecular, Civil and Environmental, Electrical and Computer, Materials Science, Biology, Chemistry/Biochemistry, Earth and Atmospheric Sciences, Mathematics, Physics,

Psychology, Computational Media, History, Technology & Society, and Society, Technology & Culture.

To learn more about the Research Option and how you can participate, please visit http://www.undergradresearch.gatech.edu/research_option/index.php.

Student Profile: Grad Student Dooroo Kim, ME

by Savannah Gowdy



Dooroo Kim is anything but your average first year graduate student. Since her sophomore year as a Georgia Tech undergrad, she has traveled all over the world to present her research. It all began

the summer after her sophomore year when she decided that she wanted to try something other than school. Kim had the choice between an internship and research. She chose the latter and contacted a few professors that she knew to see how she could get involved. Dr. Itzhak Green in the Mechanical Engineering department responded. Kim traveled to Las Vegas,

Nevada to present the work she and Dr. Green had done during the first couple of months. The next fall, she began to work with Dr. William Singhose. The main focus of this research was the control of robotic movement. During her three years of working with Dr. Singhose, she presented in Korea, Italy, Greece, and Seattle.

The most valuable lesson

she has learned during her research is team work, which ties in well with her favorite part of researching which is “being a part of a fun atmosphere full of people that work well together.” Researching is not just about what you learn inside the lab though; she also has learned important skills such as independent study, technical writing, and how

Undergraduate Research News

3rd Annual (April 3) Undergraduate Research Spring Symposium & Awards Ceremony

**Submission Deadline
February 27**

For more information, visit <http://undergradresearch.gatech.edu/SpringSymposium.php>.

Dooroo Kim...cont'd from page 3

to deal with rejection and disappointment.

While research is a great way to get further involved in your studies and well worth your time, Kim stresses the importance of finding a project and advisor that will motivate you to be your best. When asked to describe the influence Dr. Singhose has had on her de-

velopment as a researcher she responded, "He is very enthusiastic and involved in the work he does as well as his students."

While not at school, she enjoys cycling and is looking into participating in a half marathon. Kim works out every day because of the mind-improving effect it has on the body. An interest-

ing fact about her that she is proud of is her ability to do fifteen pull-ups thanks to "Trainer Singhose". She believes in being well-balanced and the effect it has on every aspect of your life.

She is not sure what her future holds, but she hopes to work in the industry and gain some professional

experience. After working in the field, she says she would not mind working in academia; she enjoys the atmosphere. Either way, this researcher has a bright future ahead of her.

Faculty Interview: James Gole, Physics

U/G Research: How did you become involved as a mentor to undergraduate researchers?

JG: As an undergraduate I had the privilege of being chosen for one of the early NSF summer research programs. I spent the summer doing hot atom chemistry for Professor Richard M. Martin at the University of California at Santa Barbara and I was hooked. This experience convinced me not only that I really wanted to do scientific research but also that, if I became a professor, I would mentor as many undergraduates as possible. The experience has been extremely rewarding and I usually have between 3 and 6 students in my laboratory.

U/G Research: What types of projects have you mentored? How do you utilize undergraduate students in your research?

JG: The students in my lab have worked on a wide

diversity of projects. They have been given real research projects where the difficulty of these projects is dictated by the intuition and ability which the student demonstrates. I have published 28 papers with undergraduates and I anticipate that several additional publications will follow. Several of the students in my laboratory carry out long term projects that may be finished by other students but the publication of the finished product results in a state-of-the-art contribution. Several students such as Jenna Campbell start as a freshman or sophomore and continue for multiple years. Jenna was the leader on a project to solve a 40-year old problem. She has just been the first author (along with another undergraduate Nicole Larsen) and graduate student (James Corno) on a publication in the Journal of the Electrochemical Society. Several undergraduates in

my laboratory have published multiple papers.

U/G Research: What should a student do to become involved?

JG: To become involved in Undergraduate Research students should talk to fellow students who are already involved in research and they should compile a vita as soon as possible, once they have some course work under their belts. Try to get a job working in a laboratory as soon as you know you are interested and have an affinity for research. This can start during the summer in high school. The tasks that a student may have at first may be menial, but they will allow you to get a feel for the lab environment. Any researcher worth his salt can spot a talented student very quickly and find more challenging projects. I have my own share of incredible stories.

U/G Research: What



are the benefits to faculty of mentoring undergraduates in research?

JG: The benefits to the faculty member of mentoring undergraduate students are many. It keeps you on your toes and it keeps you young. When an undergraduate comes into your lab, folds into the group, and becomes a respected member of the group, there is nothing more exciting or exhilarating. I have seen freshmen take over an apparatus after a few days of close tutelage. When I told Phong Nan Le that he was going to run the experiment on his own, he said, "I will mess it up." I replied, "Possibly so, but that will be the last time." I was correct and Phong was im-

Continued on page 6

Undergraduate Research News

Andrea Preininger ...cont'd from page 2

so much more and you will benefit from what you are doing. Make sure you know the professor you are working with as well so that you know his style and goals. This will help you make the best of your research experience.”

Clearly, Preininger had the best of both worlds, and went from knowing nothing about the research she was participating in to learning more than she could have ever imagined. “The experience has taught me a lot

about the technologies that are out there to help people interact better. I learned about all the innovations that have been and are in the process of being created so that communication becomes facilitated.” In addition to undergraduate research, Preininger is involved in Student Government Association, is the Social Chair of the Residence Hall Association 8th Street Council, the Publicity Chair for Women’s Awareness Month, a STAC mentor

and STAC Society Public Relations Chair. In her spare time, she enjoys playing the piano and violin, singing, and reading.

So why did Preininger choose to be a STAC major? “I chose my major because I love to write and read and did not particularly enjoy math or science. STAC is the most flexible major on campus and it offers classes in film, writing, and cultural studies, which I’m very fond of study-

ing. I also have a passion for women’s studies and STAC offers a variety of classes on the topic.” Preininger is currently interning in the communication field and hopes to work in Advertising or Marketing in the future. So the next time you hear students talking about undergraduate research at Georgia Tech, make sure to mention that there are opportunities available in all different disciplines or fields of study.

James Gole Interview... cont'd from page 5

mediately consulted by graduate students and post-doctorals alike as they continued to discuss their complementary research problems. I think many times fondly of these students and I laugh also about the amazing predicaments that they get into as undergraduates.
U/G Research: Why is undergraduate research important?

JG: In this day and age, the

number of great scientists that have not done undergraduate research are few and far between. Grades are one thing, but you can have fantastic grades and still be a klutz in the lab. Undergraduate research tells a good student early-on whether this endeavor is for him. If it is, he is exhilarated and he will do even better things as he gains more experience, not

only in the lab but also in his classes. Why? Because he sees how the things he is learning apply and, for this reason, understands them more deeply.

U/G Research: Please share any accomplishments, honors, or any other information relative to your 18 years of research experience.

JG: I think my major accomplishment is having

mentored over 90 undergraduates who have gone on to graduate school and medical school in several prestigious institutions including Harvard, MIT, Caltech, Stanford, Cal Berkeley, UCLA, UCSD, and many other excellent schools. Due primarily to Richard Giuly, I have also been awarded the Undergraduate Research Mentoring Award from the University of California.

Guarav Jain ...cont'd from page 1

ability to procure data and study independently. He suggests the key to being a successful undergraduate researcher is making a good impression in the

classroom, finding something that interest you, taking the initiative with faculty whom you share an interest, and pursuing this interest so that you

can learn more than a classroom can teach you in four years. He is hoping to publish a paper by May and is looking forward to either grad school or

working in the field.



Faculty Corner

Materials and Supplies Travel Grants

Interested in mentoring undergraduates but a little short on funds for materials and supplies? Know that you can greatly enhance an undergraduate's research experience via field work or a visit to a non-Georgia Tech location to obtain information? Georgia Tech's Undergraduate Research Opportunities Program (UROP) is sponsoring small grants for faculty mentors of undergraduate researchers during Spring and Summer 2008. Funds are available

(up to \$1500) to purchase materials and supplies, services, or pay for student travel away from Georgia Tech to assist in enabling undergraduate research that would otherwise be impossible or could be greatly enhanced with just a little support. For additional information and application instructions, visit: <http://undergradresearch.gatech.edu/faculty.php>.

Council On Undergrad Research Conference

Interested in broadening your work in programs designed to increase the en-

agement of students? You may want to check out the bi-annual Council on Undergraduate Research Conference. This year's meeting, "Frontiers and Challenges in Undergraduate Research," will be held June 21-24 at the College of Saint Benedict.. Conference sub-themes include (but are not limited to):

- Undergraduate Research and Scholarship in Arts and Humanities
- Assessment of Research Outcomes
- Beyond the academy: Real-world applications

of research results

- Early involvement in research
- Research in a Global environment
- Undergraduate research in the interface of disciplines

If you are interested in attending, please contact Karen Harwell for more information on possible funding for faculty. For more information on the conference, visit: <http://www.cur.org/conferences/csb/cur08-natconf.asp>



Undergraduate Research Opportunities Program (UROP)
Georgia Institute of Technology
MC 0740
Atlanta, GA 30332-0740
Phone: 404-385-7325
Fax: 404-385-6940
E-mail: urop@gatech.edu
www.undergradresearch.gatech.edu

Undergraduate Research Opportunities Program (UROP)

News from the Director

As I write this article, we're enjoying a rather balmy early February day. I imagine that the weather will turn cold again, but the day reminds me of Spring and what that semester offers in terms of activities and opportunities for our undergraduate researchers. Plan now to participate as a presenter, faculty or graduate student judge, or as a supporter of our 3rd annual Undergraduate Research Spring Symposium and Awards to be held April 3, 2008 in the student center ballroom. We look for this year's event to be event bigger and more exciting than the last! I invite the entire Georgia Tech community, prospective Georgia Tech students and parents, other visitors and prospective employers to turn out at the event this year. For additional information visit: <http://undergradresearch.gatech.edu/SpringSymposium.php>.

Submissions have closed for our inaugural issue of Georgia Tech's first Undergraduate Research Journal, *The Tower*. We look forward to seeing this new initiative come to fruition as an official Georgia Tech student publication. If you are interested in assisting the editorial board and production staff, please visit <http://gttower.org> for additional information.

As usual this issue contains several personal profiles of our always intriguing undergraduate researchers, information about upcoming events and funding, and congratulations to our newest set of Research Option graduates.

If you have questions about undergraduate research at Georgia Tech, please drop me an email – we're here to help!

Best,
Karen Harwell

Let Your Voice Be Heard!!

Georgia
Tech



Undergraduate Research
Opportunities Program



Student Advisory Board for Undergraduate Research (SABUR)

The newly formed Student Advisory Board for Undergraduate Research (SABUR) works toward implementing new ideas for programs and resources for students interested in research. If you're interested in serving on this board, please contact Dr. Karen Harwell, Director, Undergraduate Research at Karen.harwell@carnegie.gatech.edu. Freshman, sophomores, and juniors are particularly encouraged to become involved!

WE WANT TO HEAR FROM YOU!!!

We are always looking for subject matter for our newsletter, including suggestions of students and faculty to profile and good news to share about student achievements, publications, and presentations. If you are interested in writing for the newsletter or have suggestions for future profiles, please contact us at urop@gatech.edu.

Listserv

To receive information and announcements from Georgia Tech's Undergraduate Research Opportunities Program (UROP), join the **urop-news** listserv. To join: Send an e-mail to sympa@lists.gatech.edu with a subject of "subscribe urop-news"