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**Check Out  
UIROP's  
Spring  
Symposium  
and  
Awards  
Photo  
Gallery  
(Page 6)**

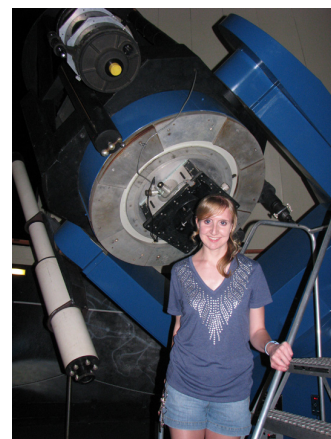
## Student Profile: Caitlyn Seim, EE

by Rosangela Dominguez

One of the biggest obstacles for undergraduate students interested in research is knowing which topics they would enjoy. For Caitlyn Seim, second year Electrical Engineering major, it was very evident what she wanted to research. "I knew I wanted to do research in Astronomy for the summer and have been volunteering at the Fernbank Observatory since 2006." Seim took the first step of contacting the lead astronomer at Fernbank and asked if she could use their facility for research. Next she approached Dr. Sowell, one of her professors here at Tech, about mentoring her for this project. Lastly, Seim surfed the UIROP website and stumbled upon PURA. Excited she wrote a proposal, applied, and was awarded the grant. Before she knew it she was ready

to start research for her project.

Seim started working on her project in summer 2009 in collaboration with astronomers from Georgia Tech, Georgia State University, Fernbank Science Center Observatory and the US Naval Observatory's (WDS). Seim's project started with background research. She first contacted Dr. John Wilson, Astronomy Laboratory Coordinator at Georgia State University, to assist her in learning about the process of Binary Star observation and analysis. While she was visiting GSU, she had the pleasure of meeting Dr. Brian D. Mason, head of the Washington Double Star Catalog and an expert in Binary Star observation, who was in town visiting from Washington. Once she had a firm hold on the process of star



observation and analysis, she began research at the Fernbank Observatory. To conduct her research, Seim used one of Fernbank's telescopes to pinpoint and photograph each Binary or Multiple Star System that she planned on analyzing. The next and final step was calculating the characteristics of the systems and tabulating the results

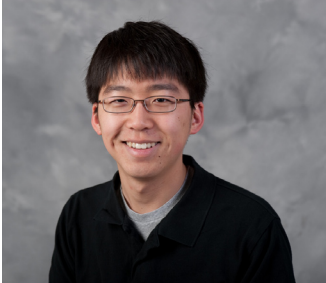
Seim believes that research experience is a must-have and that her

Continued on page 5

# Undergraduate Research News

## Submitting Research for Publication is Invaluable

by Michael Chen, *The Tower*-Editor-in-Chief (2010-2011)



What does undergraduate research mean to you? It should not just be another line on a résumé or another source of income, rather research should give undergraduates experience in experimental-based learning and an in-depth preview of academic research. Becoming

involved in undergraduate research clears uncertainties about what you would like to pursue after college—something that I have discovered from personal experience. If you currently research, I encourage you to participate in research conferences to further explore the world of research to determine, or at least narrow down, your possible career directions. Fortunately, there are many outlets for you to use here at

Tech to become well-versed in the world of research.

These outlets include Georgia Tech's annual Undergraduate Research Spring Symposium and other research conferences that go on throughout the United States. While presenting posters and oral presentations are important, the students who advance by writing articles about their research truly epitomize the ideals of an undergraduate researcher.

Research articles solidify

laboratory knowledge and thus are an indispensable part of an undergraduate researcher's experience. Writing a concise research article demonstrates a researcher's thorough understanding of the scientific method—the foundation of all academic research—and how the scientific method is used to discover the secrets of the universe.

*The Tower*, Georgia Tech's Undergraduate Research Journal, is a publication

Continued on page 3

## Cross-Contential Conference: An interview with Corey Steward

Partial reprint from the October 2009 issue of *The Firewall*, a publication from the College of Computing

**What conference did you attend? What was its focus?**

I attended the Digital Games Research Association (DiGRA) 2009 Conference. The conference is held every two years and focuses on many aspects of game studies. Several topics—like game theory, artificial intelligence design, how to use games to effectively teach children, the state of MMO games, ... how people interact with each other online. Anything centered around videogames

was fair game.

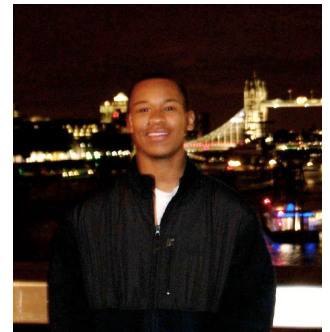
**Can you tell us about the research project?**

I presented the GLITCH GameTesters research project with PhD student Betsy DiSalvo as part of the Electronic Learning Center (ELC Lab) headed by Dr. Amy Bruckman. We are focused on building the interest of African American high school males in Computer Science through video game testing. Through previous research, we have found that there is

a correlation between playing video games and the pursuit of a computer science degree. Though African American males are highly involved in video game play and consumption, very few actually go on to pursue a Computer Science degree. We are looking to use video game testing as leverage to transform their interests in gaming into an interest in computer science.

**What kinds of people attended the conference?**

Most of the attendees were



PhDs or faculty from different schools. Just from personal observance, maybe a third did not have a strong CS background. They were geared more towards teaching through computer science and education [than games themselves]. There were professionals from the video game industry as well.

## ACC Meeting of the Minds at Georgia Tech was a Huge Success!!

For the past five years, students chosen to represent their universities have gathered at an undergraduate research conference – The Atlantic Coast Conference (ACC) Meeting of the Minds. Georgia Tech was chosen to host the event this year – the 5th Annual Conference. Over 80 students were selected by their universities to present either oral or poster presentations at the event.

Part of a student's research experience is learn-

ing to present the work to varied audiences. "Undergraduate students at all ACC universities are involved in numerous projects which provide unique contributions to research and creativity in a variety of fields. The annual ACC Meetings of the Minds conference has become an opportunity for universities in the conference to highlight the diversity of research work being completed by undergraduates and for students to share their work

with peers across the entire conference" stated Dr. Karen Harwell, Director of Georgia Tech's Undergraduate Research.

Over 45 oral presentations on everything from Sacred Harp singing to stem cell research were given over the two day period spanning April 16-17th. Twenty-six students presented posters at a reception held at GT's Academy of Medicine. A variety show featuring the GT Glee Club, Magician and



Math faculty member Dr. Matt Baker, and comedians and faculty members Dr. Lew Lefton (Math) and Dr. Pete Ludovice (CHBE) completed the Friday evening events.

For a complete program of events and additional information visit: <http://acconf2010.gatech.edu/>.

### Research for Publication..cont'd from page 2

peer-reviewed by graduate and undergraduate students. Submitting a research article to *The Tower* and going through our two-stage review process simulates the peer-review process of academic journals, giving our authors and staff a taste of the publication process in industry and academia. *The Tower* accepts three different types of submissions from undergraduate researchers:

- Article — the culmination point of an undergraduate research project; the author

addresses a clearly defined research problem;

- Dispatch — reports recent progress on a research challenge; narrower in scope;
- Perspective — provides personal viewpoints and invites further discussions through literature synthesis and/or logical analysis.

Even if you are in the preliminary stages of data collection, we would nonetheless love to hear about your research goals through a dispatch. If you would like to provide a discussion of previously published ar-

ticles or provide a review of your field, we invite you to submit a perspective. We also encourage administration, faculty, and graduate students to submit pieces on topics related to undergraduate research, such as their experiences with undergraduate students. Whatever field your research is in, you have something to contribute to *The Tower*. Contributing to *The Tower* not only helps you communicate phenomena, but also allows you to discover if a research career is in your future, whether that be

in industry or academia. Keep in mind that the common complaint among employers and graduate/professional school admissions directors is that students who participate in undergraduate research cannot articulate their research well in interviews. By submitting to *The Tower*, you will demonstrate understanding in your field of study and practice communicating your research to a wide variety of audiences.

We encourage you to

# Undergraduate Research News

## Mentoring Corner - A Book Review

presented by Dr. Jeff Donnell, Frank K. Webb Professional Communication Program, ME

### An Excellent Guide to Writing in the Sciences

“Scientific Writing and Communication: Papers, Proposals, and Presentations”

Angelika H. Hofmann

Guides to scientific writing need to do two things. First they need to explain the principles of successful writing. Second, they need to present examples that concretely illustrate those principles. These things are hard to do; as a rule, textbook authors have trouble locating and explaining examples of scientific writing that are illustrative and compelling. However, Angelika H. Hofmann's new book *Scientific Writing and Communication: Papers, Proposals, and Presentations* is an exception to this rule. This is a terrific textbook. Georgia Tech's faculty members and post-docs should own copies of it, and they should ask their

graduate students to consult this book as they edit journal submissions and thesis drafts.

Hofmann's book is built upon plentiful examples of research descriptions that were collected from students and colleagues. These examples are compelling because they display the real problems of real writers; every researcher has written or reviewed documents that look and sound like the examples in this book. As a result, all researchers will understand how those examples apply to their own work. In most cases, Hofmann teaches lessons by presenting examples twice—first as a rough draft that has clearly

gone wrong, and second as a corrected draft that clearly meets professional standards. These paired examples are richly annotated, and editing steps are explained so that authors can easily transfer those editing steps to their own manuscripts. The book's many lessons explain scientific writing in a way that is clear, concrete and easy to understand.

Writing lessons are finely subdivided in this book, with separate chapters explaining Abstracts, Introductions, Results descriptions and the like. Other sections of the book explain concretely how writing style works. Different chapters demonstrate how to write clear sentences,

how to make points in paragraphs and how to make document sections coherent. Several chapters also speak to the business side of science writing, focusing on research proposals, poster presentations and academic job packages. These matters of style, fluency and professionalism are all explained using examples prepared by students and colleagues in the sciences.

My colleagues often ask me to tell them one thing they can do to help them and their students to write and edit effectively. My answer now is this: “Keep the Hofmann book on your desk and review its lessons as you edit.”

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Research for Publication..cont'd from page 3

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read our online journal and visit our website at [gttower.org](http://gttower.org). You can find copies of the current print journal in the

Student Center, the library, IBB, and ES&T. We are also continuously looking for people to join our staff to

assist in production, review, and marketing. If you are interested, e-mail us at [editor@gttower.org](mailto:editor@gttower.org).



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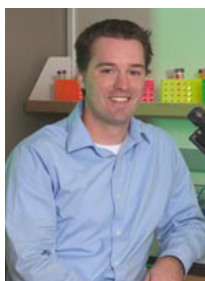
## Outstanding Undergraduate Research Faculty Mentors

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*Dr. Manos Tentzeris and Dr. Todd McDevitt are this year's Outstanding Undergraduate Research Faculty Mentor recipients. Both faculty received their awards, which were selected by the Faculty Honors Committee, at the April 2010 Faculty and Staff Honors Luncheon.*



Dr. Manos Tentzeris, a professor in School of Electrical and Computer Engineering and Head of the A.T.H.E.N.A. Research Group was awarded the senior faculty award for his long-standing work with undergraduates in research. During an eleven year career at Georgia Tech he has mentored over 45 students, many of whom present at international conferences and publish in journals. Over 85% of his students have continued in research at various graduate programs in the areas of nanotechnology, bio-electromagnetics, and environmentally-friendly electronics. Dr. Tentzeris has also been actively involved in the GT-ECE Opportunity Research Scholars Program (ORS) since its founding in Fall 2008.



Dr. Todd McDevitt, an assistant professor in Biomedical Engineering and Director of the Stem Cell Engineering Center at Georgia Tech, was honored as the junior faculty recipient of the award. McDevitt has supervised more than 25 undergraduate researchers in his laboratory, many of whom have co-authored publications and presented at national meetings. He also serves as faculty advisor for the popular Petit Undergraduate Research Scholars program.

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### Seim..cont'd from page 1

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personal experience was “inexpressibly rewarding.” She learned important technical skills, including astrophotography and numerical analysis. She gained “connections in the field and the professional experience that gives you a sense of accomplishment and radiant confidence in your professional self.” Her mentors, Dr. Sowell, Dr. Wilson, and Dr. Mason, were also very helpful and a key to her

success. They were available to answer her questions and to give valuable opinions on certain topics.

Seim's results have been added to the US Naval Observatory's Washington Double Star Catalog (WDS), as well as published in a scientific article, “Double Star Observations Conducted at the Fernbank Observatory,” in the Journal of Double Star Observations, the premiere

research journal in the field of Binary Star research. For Seim, it was truly rewarding to not only see her data match projected values but also for all her hard work to finally “take shape in such a polished form.”

Seim's research experience was one of a kind and her accomplishments and new knowledge will help her as she pursues other research topics and continues

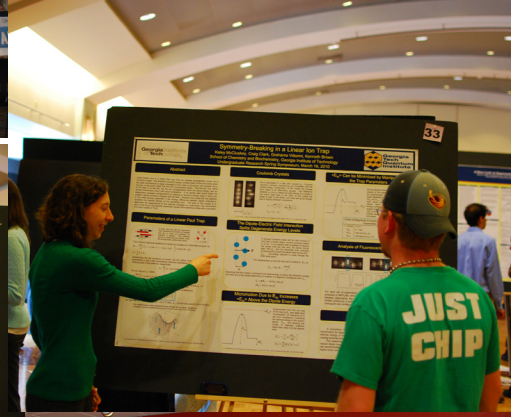
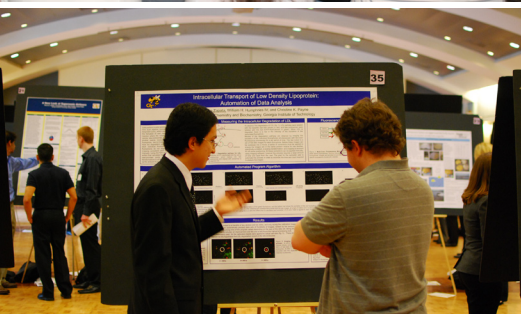
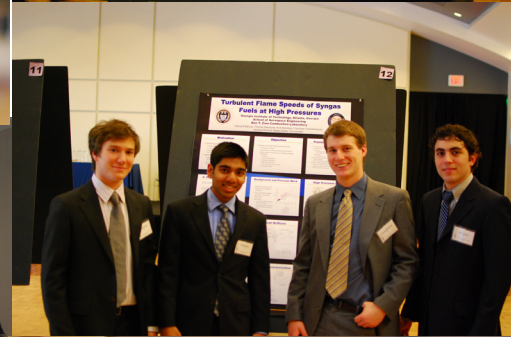
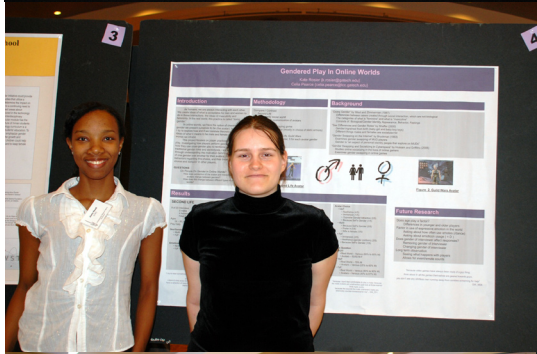
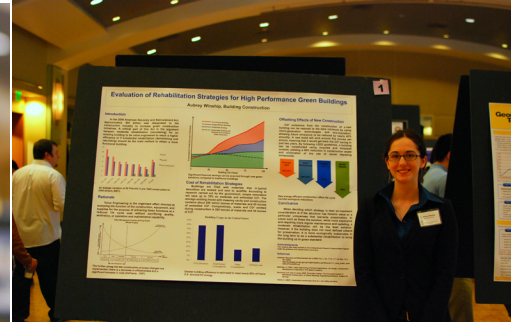
in her education. Her number one piece of advice to all those looking for research is to “pick a topic you are interested in and do not hesitate, jump right in!”





# Undergraduate Research News

## 2010 Undergraduate Spring Symposium & Awards Photo Gallery



# Undergraduate Research Spring Symposium & Awards

## March 16, 2010

### Outstanding Oral Presentations

#### College of Architecture

Brittany Utting, ARCH, *EPHEMERAL CITIES: Eliciting Tent City Growth Pattern Cellular Automata Model Factors*

#### College of Computing

Enrique Santos, Shashank Schamoli & Akilesh Natarajan, CS  
*TwinSpace: Exploring Hybrid Physical-virtual Collaborative Spaces*

#### College of Engineering

Michael Malanoski, AE, *Flame Edge Detection of a Pre-mixed, Swirl-Stabilized Flame for Low Emissions Combustion Applications*

#### Ivan Allen College

Ted Danowitz, IAML, *Nanotechnology Development and the Chinese Military*

#### College of Sciences

Robert Parrish, ME, *The Implementation of Density Fitting for Efficient Self-Consistent Field Methods in Quantum Chemistry*

### Outstanding Undergraduate Researcher Awards

**College of Architecture** - Brittany Utting, Arch

**College of Computing** - Petar Tsankov, CS

**College of Sciences** - Holly Tinkey, Physics

**Ivan Allen College** - Colby Mangels, IAML

**College of Engineering** - Ted Chen, BME; Michael Boyang Zhang, CHBE;

Joseph Thomas, CEE; Rohan Goel, ECE; James Wade, ISYE

Adam Kajdos, MSE; John Arata, ME

### Poster Session - Outstanding Posters

#### College of Architecture

- SeungHo Shin, ISYE, *Models for Predicting Construction Cost*

#### College of Engineering

##### 1st Place

- Andrew Foote, CEE, *Identification and Assessment of Water, Sanitation and Hygiene Practices in Two-Rural Communities in Accra, Ghana*

##### 2nd Place

- Matt Karesh, ME, *Incorporation of High Performance Engineering Materials to Increase the Strength of Shape-Memory Polymers*

##### 3rd Place

- Rania Khan, BME, *In Vitro Study of a Combination Drug Therapy to Treat Malignant Glioma*

#### Ivan Allen College

Katherine Lange, INTA, *Deterring Bioterrorism*

#### College of Computing

Phong Si, CMPE, *Two-thumb Chording on a Mobile Phone Keypad*

#### College of Sciences

Laura Couser, BIO, *Mannose Receptor-like Molecule Acts as Mate Recognition Pheromone Receptor in the Male Rotifer Brachionus Manjavacas*





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## Undergraduate Research Opportunities Program (UROP)

### News from the Director

Congratulations go out to the over 130 students who participated in this year's 5th Annual UROP Spring Symposium on March 16th! The event is held annually to provide not only a venue for students to present their work, but also an opportunity to celebrate undergraduate research at Georgia Tech. Each year the quality of the presentations and posters improves and more and more students are able to share their work with the Georgia Tech community. Thanks go out to many individuals on campus including our students and their mentors, over 100 faculty, post-doc, and graduate student judges, session moderators, check-in table and setup volunteers, the Student Activities Board for Undergraduate Research (SABUR), among others. We truly appreciate the teamwork across campus that allowed us to host such a successful event. In particular, I'd like to give a special thank you to Ms. Fadrika Prather, UROP's project coordinator, and Ms. Rosangela Dominguez and Ms. Nashlie Sephus, UROP's student assistants for their tireless efforts in the weeks leading up to the event. Great job!

Also included in the newsletter is an update on this year's 5th Annual ACC undergraduate research conference which was hosted by Georgia Tech at the Global Learning Center April 15-17th. Over 80 students were selected to represent their universities at the conference, including 11 from Georgia Tech.

You'll also find articles on *The Tower*, Georgia Tech's Undergraduate Research Journal, on page 2 in this issue and an announcement of the Outstanding Undergraduate Research Faculty Mentor Awards.

We encourage each of you to become involved in undergraduate research—either as a student researcher or mentor—if you are not already. Contact our office for additional information on how to become involved, support for research, and information on collaborations.

Enjoy your summer!

Best,  
Karen Harwell

## Let Your Voice Be Heard!!



### Student Advisory Board for Undergraduate Research (SABUR)

The Student Activities 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 email the Chair, Savannah Gowdy at [gt.sabur@gmail.com](mailto:gt.sabur@gmail.com). *Freshman, sophomores, and juniors are particularly encouraged to become involved!*

### WE WANT TO HEAR FROM YOU!!!!

#### UROP Facebook Page

Interested in hearing more about upcoming Undergraduate Research events, news, funding, etc? Then join the GT Undergraduate Research Opportunities Program (UROP) Group on Facebook.

#### 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](mailto:sympa@lists.gatech.edu) with a subject of "subscribe urop-news".