



CAREER CENTER FOR  
**SCIENCE AND ENGINEERING**  
INSTITUTE OF TECHNOLOGY | COLLEGE OF BIOLOGICAL SCIENCES

## Upcoming Events:

IT Commencement:  
May 9

CBS Commencement:  
May 17

IT Fall Career Fair 08:  
Sept. 30-Oct. 1

## INSIDE THIS ISSUE:

Mind over Matter	1,2
Profile of a CBS Student	1,4
IT/CBS Mentor Programs	2,3
BME Co-op	2
Get Involved!	4
Reporting Hires	4
Recruitment Process	4

## Mind over Matter?

It is well known that the brain is responsible for telling muscles when, where, and how to move. The body is composed of billions of nervous networks that help people perform even the simplest tasks like smiling or blinking.

But what if the muscles do not receive any messages—what if the critical connections have been disrupted by a paralyzing injury or nerve-destroying disease? Is that the end of being able to interact with the rest of the world?

Not if Bin He, a professor at the University of Minnesota, can help it. For these people, mind reading is no longer some sort

of sci-fi movie cliché, but rather a glimpse of hope for being able to live a more functional life. Bin He's laboratory, with the help of the National Institutes of Health and the National Science Foundation, is developing mind reading technology that has numerous applications.

Professor Bin He is well known in academia. He is a Professor of Biomedical Engineering, Electrical Engineering, and Neuroscience at the University of Minnesota's Institute of Technology. Bin He's research has been geared toward the investigation of brain-computer interfaces. The goals of his research are to develop a system that can read the

"thought" of subjects and then control external devices based on the information from the brain waves.

This innovative technology consists of a computer and a "thinking cap," which is composed of 64 electrodes. (Cont'd on pg 2)



Dr. Bin He performs a study on a volunteer who wears the "thinking cap."

## Profile of a CBS Student

Carrie Evavold is a sophomore in the College of Biological Sciences, pursuing a degree in genetics, cell biology, and development, as well as a degree in physiology from the College of Liberal Arts.

Carrie is a very hard working and goal-orientated student. She has been part of the CBS honors program for two years and enjoys the associated challenges. Her rigorous course load currently includes organic chemistry, physics, and biochemistry. She enjoys these courses and looks forward to studying courses more

specifically within her major in the future such as the molecular biology of cancer.

Currently, Carrie works in the Academic Health Center on University of Minnesota's East Bank campus. In addition, she volunteers at Fairview Children's hospital on the weekends. Last year she volunteered in the infant and toddler center and now she is at the family resource center. She feels that the University hospital is a great way to reach out in the community while gaining experience within the medical sciences environment. (Cont'd on pg 4).



## Mind over Matter Cont'd

This cap has the ability to extract information from electro-physiological signals such as scalp EEG to estimate the intent of human subjects. Bin He records EEGs of an individual performing a simple motor task and records brain activity with the functional magnetic resonance imaging (fMRI) as the subject performs the same task. By combining the spatial resolution afforded by fMRI with the temporal precision EEG offers, the approach provides an exceptional picture of brain activity over space and time.

Current research of this technology involves volunteer subjects controlling a computer "ball" much

like that of the video game, "pong." The subject concentrates or thinks about moving a hand or other body part and the computer processes the brain waves and translates them into a signal that moves the ball on the computer screen towards the intended target. The computer is programmed to move the cursor up if the volunteer thinks about moving the left hand and down if they think about moving the right hand. Typically, a highlighted patch in the rear right cortex is associated with thinking about moving the right hand and the rear left cortex lights up when the person thinks about the left hand.

Amazingly, test subjects have a fairly high amount of accuracy. Bin He stated that some subjects can "hit" the target 95% of the time! He believes this technology will eventually be wireless and will have many practical applications, from video games to simulators. But the most exciting possibility is moving artificial limbs with only the mind. He hopes his research will one day help people with paralysis or movement disorders perform basic tasks with the help of a computer that translates their thoughts into actions. What a powerful thought!

By: Brittany Cull



Organized by the IT Alumni Society since 1991, the program links science and engineering students with professionals in technical fields.

### Institute of Technology:

The IT Mentor Program is an excellent way for students to gain an outside perspective on school as well as experience some of the working world. In addition, it is a great opportunity for working professionals to share their advice and experiences. Organized by the IT Alumni Society since 1991, the program links science and engineering students with professionals in technical fields.

Sophomore, junior, and senior students are paired with a volunteer mentor based on major, field of study, and professional interest criteria. Mentors meet with their students for at least two hours every month. During this time, students recognize and investigate their career goals as mentors supply advice, relate information about their education and career paths, and share ideas.

Meetings are encouraged to be in person; however, long distance correspondence can take place through phone or email for some of the 450 students involved. Discussing career strategy, attending professional meetings, reviewing resumes, and touring a company are some examples of activities of the Mentor Program.

## Mentor Programs

Some mentor responsibilities include representing your career or degree area, reflecting your profession's attitudes, concerns and insights, serving as a representative of your employer by introducing the student to your company or industry, and assisting the student in identifying realistic goals. In addition, mentors and students will attend scheduled events, such as the mentor program orientation and thank you event.

The only requirements for mentors are an interest in helping a student develop professionally and a time commitment of 2 hours per month, October through April. One does not have to be an alumnus of the University of Minnesota to participate.

More information can be found at: [www.it.umn.edu/alumni/itas/mentor/index.html](http://www.it.umn.edu/alumni/itas/mentor/index.html), or by contacting Liz Stadther (IT Alumni Relations) at 612-626-1802. (Cont'd on pg 3)

By: Jenny Brown



**“This is an excellent opportunity for companies to meet enthusiastic and qualified students within the biomedical engineering field.”**

## Mentor Program Cont'd

### College of Biological Sciences:

The CBS mentor program is part of the Biological Sciences Alumni Society and it works to match students with professionals who have similar interests. The purpose of the program is for students to gain real world experiences and information about his or her career. It also provides a way to expand the students' networks and create connections between current students and alumni. The program is aimed towards CBS sophomores, juniors, and seniors. The mentors are volunteers that are CBS alumni or any biological sciences professional.

The mentor program runs from November to April and requires a minimum of one meeting each month between the mentor and the student. This meeting can be in person, on the phone, or via e-mail. The times and details of the meeting are set up between the mentor and the student in order to find a convenient time and place.

There are many topics and activities that are usually done throughout the duration of the mentor program. The student and mentor discuss goals, careers, and graduate school. Often a student will job shadow, attend professional meetings, or be introduced to other professionals within the field. The mentor can also help the student by critiquing resumes, helping with the job search process, and serving as a source of encouragement.

Student applications are due early October and can be found online along with more information at [www.alumni.umn.edu/cbsmentor](http://www.alumni.umn.edu/cbsmentor). Mentors can apply anytime but are matched up with a student in October. For further information and to learn how to apply visit [www.cbs.umn.edu/main/resources/alumni/mentoring.shtml](http://www.cbs.umn.edu/main/resources/alumni/mentoring.shtml).

By: Natalie Anderson

## BME Co-op Program

The Department of Biomedical Engineering at the University of Minnesota knows that work experience provides learning opportunities that complement the classroom. Solving practical problems by the application of fundamental principles both academically and professionally is the essence of Engineering. In order to develop well rounded, experienced students, the department has created a Co-op program for students with junior standing. The department feels that by observing professional engineers at work and utilizing their engineering education in industry, student's academic experience and coursework, including emphasis area classes and senior design, will be more meaningful.

It is also important to note that this opportunity will benefit both the student and the hiring company. This

is an excellent opportunity for companies to meet enthusiastic and qualified students within the biomedical engineering field. It is also a great way to train prospective full time employees and have time to assess their potential within the company. Since the Co-op is a full year course enrollment, it is required that the hiring company offer full time employment through out both semesters. It is encouraged that students being in the summer before the program as an intern, with the possibility of maintaining the position through the following summer.

The principal objective of the program is to allow students to gain relevant industrial and professional experience during their academic years. The program is available for all biomedical engineering students with upper division status that have completed the required course work through spring semester of their third year. Students will register for two courses, BME 4801/4802 in the fall and spring and will earn 2 credits and 3 credits respectively. At the end of each semester of the industrial assignment, students will be required to

submit a written report about his or her work experience. In addition, students will report their experiences to BME faculty and industrial advisors in a presentation given at the end of the school year. The industrial assignment should contain a learning experience for the student, which includes the application of science and engineering principals to the practice of engineering and the implementation of non-engineering issues such as management, teamwork, and communication skills. In return, the student should accomplish significant engineering tasks for the company.

Evidently, the implementation of a co-op program is a unique tool at the fingertips of students and professionals alike. If you or your company are interested in participating in the fall of 2008, please contact Darren Kaltved, Associate Director at the Career Center for Science and Engineering at the University of Minnesota at (612)624-4090 or by e-mail at [dkaltved@umn.edu](mailto:dkaltved@umn.edu)

By: Brittany Cull



# Increase your company's involvement on campus!

- Connect with IT and CBS students through participation in career fairs, mock interviews, and company information sessions.
- Brand your organization and increase student knowledge of your company.
- Associate with related student groups.

For more information please contact Darren Kaltved at [dkaltved@umn.edu](mailto:dkaltved@umn.edu) or (612) 624-4090.



Start the recruiting process early; contact the CCSE.

## Recruitment Process

It is important to the Career Center for Science and Engineering that employers are aware of the recruitment process and the deadlines that come with it. An essential part of finding the best candidates for positions is giving students ample time to find them.

Although it may be far away, Employers looking to fill full-time, co-op, or internship positions this fall need to submit postings on Goldpass by July or August. This process gives companies the possibility to reach out to a diverse population and pick the future employee that fits both the company and job. If there are further questions regarding the recruitment process, they should be directed to Donna Gustafson at: [ccsejobs@umn.edu](mailto:ccsejobs@umn.edu).

By: Ben Johnson

## Profile of a CBS Student Cont'd:

After graduation, Carrie's plans are to continue her education and study medicine. As for the immediate future, she hopes to conduct research in a laboratory while continuing to succeed in her academic studies.

Carrie is just one of many outstanding students enrolled in the college of Biological Sciences. Her drive for academic success and her commitment to the community demonstrates the positive attitudes of students here at the University of Minnesota.

By: Natalie Anderson

## Reporting Hires

Getting hired is an exciting time for both employers and employees and so is getting accepted into a graduate program. While these events are important to students and recent graduates, it is also an important time for the Career Center for Science and Engineering because records of each hire, offer, and acceptance need to be documented.

When you receive or accept an offer from an employer (including internships or co-ops) or get accepted into a graduate program, please report it to CCSE. Information is kept strictly confidential and is used as guidelines for other students. You can submit this information online through the CCSE website at: [www.ccse.umn.edu/report\\_offers.html](http://www.ccse.umn.edu/report_offers.html)

By: Ben Johnson

### Career Center for Science and Engineering

University of Minnesota  
50 Lind Hall  
207 Church Street S.E.  
Minneapolis, MN 55455

Phone: (612) 624 - 4090  
Fax: (612) 626 - 0261  
E-mail: [ccse@umn.edu](mailto:ccse@umn.edu)

### FUN FACT OF APRIL

**32% of graduates from the Institute of Technology find jobs in places other than Minnesota.**