



COSMOS UC San Diego

California State Summer School for Mathematics and Science

Alumni Newsletter Spring 2012

COSMOS Alumni:

This is your newsletter, so let us know what you want to see! Send us your updates, your accomplishments, your photos, anything you'd like to share with your fellow alumni!

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UCSD Jacobs School of Engineering

Visit our website: cosmos.ucsd.edu

Dear COSMOS Alumni,

The school year is wrapping up and summer is feeling closer than ever! For us, this is an exciting time as we prepare to embark on yet another journey through the COSMOS Program in July. This year, we had an overwhelming number of applicants for the program, with almost 800 students who began an application! In addition, we are piloting two new clusters in place of two old ones, namely Cluster 6 (now called "Biodiesel from Renewable Sources") and Cluster 8 (now "Tissue Engineering and Regenerative Medicine").

We would also like to give a shout out to some alumni who are returning to our program either as a Cluster Assistant or as a Resident Advisor:

- Matthew Hogains - UCSD Alum. 2010
- Austin Hsu - UCSD Alum. 2009
- Daneesha Kenyon - UCSD Alum. 2009
- Kelly Lim - UCSD Alum. 2009
- Wilson Lu - UCSD Alum. 2010
- Anusha Pasumarthi - UCSD Alum. 2010
- Alan Sanchez - UCSD Alum. 2009
- Kami Wang - UCSD Alum. 2010
- Riley Yeakle - UCSD Alum. 2009

In other news, Four UCSD COSMOS alumni were award winners at the 2012 Greater San Diego Science and Engineering Fair, which was held in March:



Weston Braun ('11) won 1st place from the Electronics and Electromagnetics senior division at 2012 state-level science fair.

Send us your photos for the next issue!

Noa Glaser ('11): Armed Forces Community and Electronics Association Award, Accenture Award, and the SDSC Computational Science Award.

Sachi Pitkin ('11): Marine Technology Society Award

Weston Braun ('11): Armed Forces and Electronics Association Award, IEEE Award, Society of American Military Engineers Award, U.S. Metric Association Award, and the Sigma Xi Award

Meredith Lehmann ('09): Senior Sweepstakes Runner-Up, Joanne Helton Memorial Award, Kaiser Permanente Award, San Diego County Pharmacists Associate Award, Journal of Youths in Science Award

Meredith Lehmann was also chosen as a finalist in the 2012 Intel Science Talent Search competition, which was held in March in Washington D.C., for her project, "The Spread of Epidemics on the US Transportation Network: The Role of Air and Long Distance Auto Travel."

Have you received a recent award or honor? If so, send an email to cosmos@ucsd.edu so that we can share your accomplishment in the next UCSD COSMOS Alumni newsletter!



Namrata Das ('11) and Noa Glaser ('11) were both selected as recipients of 2012 NCWIT (National Center for Women & Information Technology) Awards for Aspirations in Computing for Southern California and were honored at the Southern California affiliate award ceremony, which was held on April 14, 2012 in Santa Ana, California.

Alumni Profile: Alex Rodriguez



Alex Rodriguez attended Cluster 7: Biological Motivations for Tensegrity Structures in the summer of 2010. He is currently a first-year Computer Engineering major at UCSD. Alex presented his team's final project at the 2010 Nobel Laureate Dinner at the Getty Center in Los Angeles. We asked Alex to respond to a few questions for us:

Why did you choose UCSD?

I chose UCSD because it was one of options I had in attending my undergraduate career. I was debating the choices I had and after many decisions, I selected UCSD. After experiencing the atmosphere of UCSD at COSMOS, I knew I pick the right college. Sincerely, college is what you make of it, I made new friends and fell in love with my department. Also, because of COSMOS, I knew UCSD had a strong engineering department overall in the nation. This was a great place to be and graduate from in the near future.

Why did you choose your particular major?

I choose Computer Engineering because after experiencing programming during the summer, I decided I wanted to change my major from Bioengineering to Computer Engineering. I see a lot more creative projects coming out of Computer Science and wished to take part in those, but also because there are so many job opportunities open for Computer Science majors.

What kind of courses are you currently taking? Which are your favorites?

Since I am freshman at Warren College, I have been taking some regular math requirements and my favorite classes are those from Computer Science. One of my few favorites was CSE 8B because we programmed GUI applications to do grocery catalogues, a casino game, and draw Mickey Mouse. Even though it required a lot of work and was very time consuming, I enjoyed spending my time in programming and meeting other programmers.

What kind of research are you currently involved in, and/or what extracurricular activities and organizations do you participate in?

At UCSD, the extracurricular activity that I am really involved with is Computer Science and Engineering Society (CSES). I am part of the board committee as Games and Activities Chair and manage game events for the department and the students. Besides CSES, I advocate for the Women in Computing (WIC) organization, attending their state-wide conferences, like CWIC-SoCal, and am a Volunteer Tutor for CSE SAGE (Students, Achieving, Guiding, Enriching) organization, where I aid students in an introductory Computer Science course.

How did COSMOS help prepare you for your undergraduate career?

COSMOS has help prepared me for my undergraduate career in many ways. Because of COSMOS, I have had a better transition to the overall campus of UCSD, since I had spent four weeks here during the summer of 2010, and it has allowed me to become confident in who I am and in my major, but also speak to my professors about my needs as a student and to

talk about my life and their life. Furthermore, COSMOS prepared me very well in the type of work and expectations college professor have.

What are your future aspirations?

My future aspirations include working at the tech industry in the heart of Silicon Valley for companies such as Google, Apple, Pinterest, and also getting my master's degree in either Computer Science or an M.B.A from Stanford Graduate School.

Do you have any advice for your fellow COSMOS alumni who are still in high school?

The advice I have for my fellow COSMOS alumni is once you head to university, there are so many organizations, but find one that fits your personality and sense of environment. I went to many organizations during my first quarter but I found that CSES was what I was passionate about and could aid in my success. Also, college is about making connections with your peers and getting advice from them. Because of the connections that I made in events with undergraduate and graduate students, more people know me and provide great advice for what classes to take, what to do during the summer, and much more. Some advice that was given to me by a grad mentor of mine is to start to apply to internships as a freshman. Even though most companies do not hire freshmen, it is a great way to understand the process of industry and for recruiters to get to know you before you become an third or fourth student, and then you can apply again!



“Because of COSMOS, I have had a better transition to the overall campus of UCSD.”

Faculty Update: Nate Delson

Dr. Nathan Delson has been with the UCSD COSMOS faculty team since the beginning of the program in 2005. He is a lecturer for Mechanical and Aerospace Engineering Department at UCSD and is lead instructor for UCSD COSMOS Cluster 2: Engineering Design and Control of Kinetic Sculptures. Dr. Delson took time out of his busy schedule to respond to our questions:

What courses do you teach at UCSD? Are you involved with any other academic or student organizations/programs/initiatives on campus other than COSMOS?

I teach hands-on engineering design courses. I have an introductory design class, MAE3, where students build robots to compete in a head-to-head competition. This is often their first hands-on design experience and empowers many students to go into internships or work as research assistants on campus. I also teach a senior level design class where student teams work on industry and research problems. Our projects include medical applications, defense industry projects, consumer products, environmental monitoring, and devices for developing countries. You can see examples of student work at: Student Robots in MAE3: http://www.maelabs.ucsd.edu/mae3/Robot_Contest/Contest.htm Senior Design Projects in Mechanical Engineering: http://www.maelabs.ucsd.edu/mae156/student_projects.htm

What are your current research topics and initiatives?

I am working on a medical device that will help surgeons and first responders learn how to intubate a patient. The process involves putting a thin tube through the mouth and into the airway opening. This process can be very difficult to learn, and we developed an instrumented mannequin so medics and medi-

cal students can practice the procedure in a realistic environment. We measure the motion and forces during intubation and compare the trainee to an expert. Another product I am working on will monitor when an individual takes their medications, and send them or their loved ones a text message if they forget! I am also working on starting a new course at UCSD in Product Design and Entrepreneurship where students will develop their own product concepts and learn about how to patent and bring their ideas to market.

Why did you choose to get involved with COSMOS?

I love teaching in general, but COSMOS provides a great way to work closely with students. There are no grades in COSMOS, but the students are highly motivated and choose challenging projects. In this setting we work together in small groups on tackling these challenges together. So much learning occurs when the students take ownership of their projects that is just a pleasure to be part of their pathway to discovery.

Do you keep in contact with any of your cluster alumni?

Luckily, a number of them have become students at UCSD and I have had the pleasure of seeing familiar faces in my classes. One alumnus will be a cluster assistant this summer (check out the cluster website in summer 2012 and see if you can match up the cluster assistant to their project webpage when they were a COSMOS student!). I also receive emails and inquire from students on other campuses as well.

See: <http://www.maelabs.ucsd.edu/cosmos/>

How do you feel COSMOS prepares students for UCSD, or for college in general?

College is an environment where one has to become self-driven to get the most out of it.



“Don’t forget to develop an intuitive understanding of the material you are studying... Always be curious.”

COSMOS shows how one can delve into a topic deeply and become totally engaged in it. COSMOS also shows how important the social aspect of college is, and how having fun and working hard are not contradictory.

Do you have any advice for COSMOS alumni that are still in high school?

Don’t forget to develop an intuitive understanding of the material you are studying. The mental models you create in your mind are more important than memorizing equations. Always be curious. Remember that engineers solve problems and there are always multiple solutions to the challenges you



That’s all folks! Have an awesome and safe summer and look out for our next issue in Fall 2012!

UCSD COSMOS is on Facebook! Link up with us at:

www.facebook.com/ucsdcosmos