



COSMOS UC San Diego

California State Summer School for Mathematics and Science

Alumni Newsletter Fall 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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Send us your photos or story for the next issue!

UCSD School of Jacobs Engineering

Contact us:
cosmos@ucsd.edu

Visit our website:
cosmos.ucsd.edu

Attention UCSD COSMOS Alumni!

Are you a high school senior, college undergraduate, or graduate student who is currently attending school in the San Diego area? Or, are you employed in the San Diego area? If so, you are invited to apply for a position on our UCSD COSMOS Alumni Advisory Council (AAC). Visit <http://www.jacobsschool.ucsd.edu/cosmos/alumni/> to get more information and to download the application. **The deadline to apply is Friday, November 30th.** Applications will be screened and candidates will be selected by our UCSD COSMOS administrative team. Serving on this committee could be a great addition to a college, scholarship or job application; or resume. Apply now!

COSMOS Alumni Lunch Meeting

If you are a COSMOS alum currently attending UCSD, please plan to join us at the COSMOS Alumni Lunch Meeting on Friday, November 9th, at Jacobs Hall, room 2512 (Booker Conference Room) from 12-1pm. Come and meet other COSMOS alumni who are at UCSD, as well as receive information regarding COSMOS alumni opportunities and events. Kindly **RSVP by Tuesday, November 6th to cosmos@ucsd.edu** so that we can order plenty of food and beverages for all who attend. Alumni from all COSMOS campuses and years are invited. Hope to see you there!

Alumnus Luke Bockman

Luke attended UCSD COSMOS 2011, Cluster 2: Engineering Design and Control of Kinetic Sculptures. Luke (blue shirt) and his Oceanside High School Robotics Team were invited to exhibit their club's activities at the California STEM Summit 2012 on October 15 in San Diego. Kareem Abdul Jabbar had just been named as California After School STEM Ambassador at the conference that day. Luke offers a few thoughts below.

"Kareem Abdul Jabbar is tall, really tall. I felt honored to be able to present my school's seven person robotics team and our activities to the all time leading scorer of the NBA. Last year, we participated in Botball and IAROC autonomous robotics competitions. We were required to create a robot, using legos, motors, servos, and sensors, that would be able to complete challenges on its own. Often the program doesn't work or the motors fail, but through testing and patience, eventually a stable and working design comes through. In community service and small competitions, our team works together".

Important Upcoming Dates

Friday, Nov 9— Lunch for current UCSD students who are COSMOS Alumni.

Saturday, January 19-COSMOS Open House for prospective students (and any local Alumni who would like to attend or be on our alumni panel).

NOTE the new COSMOS Application dates: **January 21—February 22, 2013**

Giving Back to COSMOS

We had a record number of COSMOS Alumni helping to make our 2012 program successful! Our Alumni RA's were: Wilson Lu, Alan Sanchez, Kami Wang, Kelly Lim, and Austin Hsu. Alumni Cluster Assistants were: Riley Yeakle, (C1), Matthew Hoggins (C1), Daneesha Kenyon (C2), and Anusha Pasumarthi (C7). Enjoy reading some of their perspectives on the next page. If you are a current student at UCSD, consider joining us for Summer 2013.

We welcome your direct support as well. All donations, both large and small, make a difference and are tax deductible. We have an online donation website on the COSMOS Statewide website for you to learn more about how you can support the efforts of the COSMOS mission and goals: <https://npol.networkforgood.org/Donate/Donate.aspx?npoSubscriptionId=1005654&code=Wwebsit>

We believe that students and their families are our best ambassadors and advocates. Thank you for your help in promoting and supporting COSMOS!

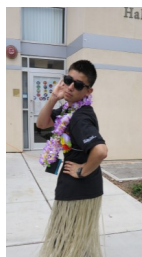


Photo: John Gastaldo, San Diego Union Tribune

Alumni Profiles: Continuing the COSMOS experience...

Alan (Pollo) Sanchez:

*Attended: COSMOS UCSD, 2009; Cluster 6: Exploring the Cosmos, UCSD RA 2012
Currently: UCSD, Mechanical Engineering*



COSMOS was a life changing experience for me. I learned a great deal from my class, and it was taught by fun and motivating professors who specialized in the course subjects. This program also gave me an on-campus living experience as games, programs, and activities were set up every evening by our amazing Residential Advisers. Thanks to COSMOS, I returned to high school my senior year knowing what and where I wanted to study, making my application process easier. I chose to double major in Mechanical Engineering and Physics at UCSD and I am extremely content with my choice. I appreciate what this program has done for me, and I wanted to give back to COSMOS by being a Residential Adviser. Being an RA this past summer was just as rewarding and life changing as when I attended the camp three years ago. I learned a lot from my residents and had a fun experience guiding them through the four week program. COSMOS has had a huge impact on my life and I am so grateful for how it benefits the young kids who attend.

Wilson Lu:

*Attended: COSMOS UCD, 2010; Cluster: Computers in Biophysics and Robotics; UCSD RA 2012
Currently: UCSD, Computer Science Engineering*



My RA experience went well! I was able to gain valuable leadership experience on managing hundreds of students and learned about new programs I can use in future leadership opportunities. I made life-long friends with fellow RAs and students as well. As a Computer Science major, I was glad I was the cluster RA for Cluster 1: Computers in Everyday Life. I knew I would be able to relate with the students in my cluster since I share the same interest in com-

puters. Being both a COSMOS alum and a COSMOS RA now, I definitely appreciate the hard work of my RAs when I participated in COSMOS as a student, and I realize how important an RA is in making the students experience more enjoyable. It was wonderful experiencing COSMOS from the perspective of an RA, and I enjoyed it even more because I was able to get to know and relate with more students, especially the ones in my suite. Overall, I learned that COSMOS is a life long family. Whether as a student or an RA, I am able to make great friends and learn new things every time I participate in this program. I definitely am looking forward to the possibility of working with COSMOS again in the future.

Riley Yeakle:

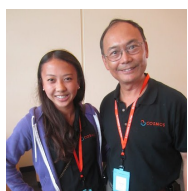
*Attended: COSMOS UCSD, 2009; Cluster 1: Computers in Everyday Life; UCSD Cluster 1 Assistant 2011, 2012
Currently: UCSD, Electrical Engineering*



This cluster introduced me to the field of embedded systems, a fusion of electrical and computer engineering. Through the COSMOS program, I got a taste of real engineering, something that would have otherwise been completely unavailable to me. The big thing I learned from COSMOS was that I do not need to wait until I have a piece of paper that says I studied engineering to do awesome engineering projects. COSMOS taught me that if I wanted to build something, all I had to do was jump in and make it happen. So I did.

Kami Wang:

*Attended: COSMOS UCSD, 2010; Cluster 6: Exploring the COSMOS; UCSD RA 2012
Currently: UCSD, Human Development*



I really enjoyed my student experience at COSMOS because the students and staff in the program were knowledgeable, friendly, and truly cared about the well being of others. Although the class work was challenging, I learned that it is okay to ask for help and struggle from time to time. The COSMOS residential life made the transition to college life easier because COSMOS gave me insight

on how dorm life works. COSMOS taught me that it is important to create a relationship with your Residential Advisor and to build a community with those you live with. As a Residential Advisor for COSMOS 2012 this past summer, I realized it was a completely different experience than being a student. I loved being an RA for COSMOS because it's amazing to see how much the students grow in just a month. Watching over the students created a strong bond between those that I interacted with and me; we began to rely on each other and became each other's moral support. Overall, I can't decide if it is better to be a COSMOS RA or a COSMOS student, but I know that COSMOS is by far one of the best and life changing programs that I have done.

Anusha Pasumarthi:

*Attended: COSMOS UCSD, 2010; Cluster 7: BE/ME: The Amazing Red Blood Cell; UCSD Cluster 7 Assistant, 2012
Currently: UCSD, Biochemistry*



Attending COSMOS at UCSD, and participating in Cluster 7 as a high school junior was definitely an exciting and valuable experience. Making new friends, adjusting to a roommate and interacting with professors were just some of the things that kept me busy and entertained. COSMOS provided great insight into what college life was all about and helped me build a stronger personality and leadership skills. I was able to utilize these experiences in the college application process by incorporating them into my essays and decisions about colleges. COSMOS has not only been a great influence in my education, but still continues to impact my career goals. After attending COSMOS as a student, I decided to major in Bioengineering at UCSD. Participating in the program as a Cluster Assistant this past summer, confirmed my major change to Biochemistry. Returning as a Assistant was definitely nostalgic, yet challenging, since I had higher responsibilities within the lab. Having to teach passionate and hardworking students was not only surprising, but also rewarding, since each one of them clearly mirrored my own experiences as a student. My time as a Cluster Assistant made me realize that though I have had many changes, the source of such constructive change, COSMOS, has not budged in creating a new social and academic world for hundreds of aspiring students.

Faculty Update: Mauricio de Oliveira

Dr. Mauricio de Oliveira has been with the UCSD COSMOS faculty team since 2006. He is an Adjunct Associate Professor in the Mechanical and Aerospace Engineering Department at the Jacobs School of Engineering, UCSD. He is the lead instructor for UCSD COSMOS Cluster 7: Bioengineering/Mechanical Engineering: The Amazing Red Blood Cell. Dr. de Oliveira responded to our questions, providing his thoughts on the COSMOS program:

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

I typically teach systems and controls courses at the graduate and undergraduate level as well as an electric circuits undergraduate class. In the systems and controls classes you learn how to model the interaction of systems with their environment and how to change their behavior. In the last two editions of COSMOS we have added lab experiments to teach some of these concepts at the high-school level. I have been involved with a number of student organizations in the past helping students design and build race cars, unmanned airplanes and submarines, and battle bots.

What are your current research topics and initiatives?

I work on topics related to optimization, systems and control. Some of the work I do is on the design of special structures called *tensegrity structures*, which is a main component of the curriculum of Cluster 7.

Why did you choose to get involved with COSMOS?



The idea for Cluster 7 came out as Bob Skelton and I worked on a joint research project with Carlos Vera (Cluster 7 co-instructor) and Amy Sung on modeling the cytoskeleton of red blood cells using tensegrity. We thought that we could propose an exciting multidisciplinary cluster where the students would be exposed to concepts from molecular biology and mechanical engineering under the unifying grand theme that is the red blood cell. COSMOS is a great program for the students as well as for the faculty. COSMOS students are very smart and motivated, which makes teaching really fun.

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

Yes! Many students go back to their schools and try to bring the new ideas they learned at COSMOS to their labs and classrooms, and sometimes in the form of science projects. We are happy to hear from our alumni and interact with them. It is also a pleasure to see COSMOS students come back as UCSD students. Some of them become our cluster assistants or come by to share their experiences with our current COSMOS students in the summer.

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

COSMOS gives high school students a window to peek into their future college life. For a month they get to “play” college students and I think this gives them a vantage point from where they can better plan their next education steps. They interact with a really select group of smart students and attend excellent labs and lectures on current research topics by UCSD’s outstanding faculty.



“Research in science and engineering evolves very fast, so don’t be afraid to change paths if an opportunity appears in front of you”

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

Research in science and engineering evolves very fast, so don’t be afraid to change paths if an opportunity appears in front of you. And keep up all that enthusiasm and energy you brought to COSMOS in your future studies!



Keep in touch! Enjoy fall and look for our next issue in Spring 2013!

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

www.facebook.com/ucsdcosmos