We are finishing up a fun first week of Cosmos. First days are full of introductions; from introducing yourself to other students, to introductions from your professors in a brand new learning environment. One of our professors, Mauricio Oliveira, from the department of Mechanical and Aerospace Engineering, shocked us on the first day with the realization that pitch and rhythm are more closely related than we assume. What we consider pitch is simply rhythm being played at a fast enough rate that our brains are unable to differentiate each individual beat; we just get lazy! We have two Teaching Assistants, Kevin and Colin, who are doctoral students in UCSD’s Computer Music program. We also met our Teacher Fellow, Kim, who loves math and attends all our lectures with us, and leads a Science Communication course on Tuesdays and Thursdays.

At COSMOS, we have access to numerous digital and physical resources that facilitate our learning of music production and technology. These state-of-the-art facilities include the EnVision Maker Lab, equipped with technologically sophisticated 3-D printers, a laser cutter, soldering station, and other industrial tools; the famous Geisel Library, an eight-story building that is as architecturally impressive as it is useful; and the professional recording studio located in the new Conrad Prebys Music Center, another workspace that we readily use. In UCSD’s Engineering Building Unit II Lab, we played with littleBits, modular synthesizers equipped with magnets that allowed us to explore and invent synthesized music. We were led through a tutorial on Pure Data, a visual programming language that we utilize to create interactive computer music. With the aid of the TAs, we were able to program various tones, metronomes, chords and oscillating sounds, as well as audio recordings and playback.

Being the Music and Technology Cluster, we have spent much of our time in the recording studios, control rooms, and other facilities of the Conrad Prebys Music Hall. During our time within the studio, we got to write our own original theme songs. We were placed into different groups, which allowed us to interact and work with other members of our cluster. After a short thinking period, we then got the opportunity to professionally record our tracks and perform them in front of our peers. During this process we were exposed to many new technologies and resources that we can use for our final projects, and far into the future within careers. Because of this experience, we got to feel what it’s like to be a professional musician in a high end recording studio; furthermore, we felt like actual college students, learning complex musical programming and attending lectures with renowned professors.

During our first week at COSMOS we experienced many new lifestyle challenges and responsibilities. Waking up and walking ourselves to classes, as well as other activities gave us new insight to the responsibility and maturity required to live in a college setting. Cluster 9 is especially excited about preparing for our COSMOS-wide competition, COSMOlympics, where we came up with an original scene or musical arrangement. We’re super excited to show off our cluster pride this Friday by incorporating music and technology! All of the staff at COSMOS work hard to make sure that the environment is warm and welcoming. All of the students are also very supportive of each other. It has been really easy to make new friends and get to know each other, and we can’t wait to see what is coming!
One of the most exciting events for us this week was COSMOlympics! Each cluster had to create an original skit and work together as a team to try and win relay races and other games. Every cluster performed a 4-6 minute long skit to compete for the bragging rights of top cluster. As a cluster, we contributed our ideas and showed support for one another in order to come up with a musically infused performance using everyday objects. Our skit took place in the COSMOS Coffee House where one person started by tapping on a plate and others slowly joined in, tapping on different objects including buckets, cans, and bottles to create a rhythm. Then, three of our group played the guitar and later, others performed an original rap about our cluster. We spent the first week practicing or performance for at least an hour each day. All of our hard work paid off in the end because we won! COSMOlympics really brought Cluster 9 together as a whole, and although winning was a plus, the teamwork we exercised was what was truly incredible. We ended the night celebrating at the Cosmos-wide dance on top of Middle Earth. Overall, COSMOlympics was a remarkably fun and exciting night for all of us!

On Wednesday, we took our first look at synthesizers and how they can control the frequencies of sound waves. We learned all about oscillators and their role in creating the sound waves. We also learned about how there are different variations of waves that you can have within music. You can have a saw shaped frequency, a triangular shape, and a wavy formation. These different waves all have different effects relative to the outputting sounds. For example, a triangular shaped wave will have more characteristics of harmonics being played then the wavy frequency which has a more bland deep tone. We also learned about the capabilities of Raspberry Pi. A Raspberry Pi is essentially a 35 dollar mini computer that can run some of our important programs such as Pure Data, Audacity, Ableton Live and more. Using this device we can program a certain function within music, and then take it stored somewhere as convenient as your pocket to then use somewhere else.

We have also been learning a lot about college life. On Tuesday, we talked about the differences between college life and high school life and how to be better prepared for the college environment. We also talked about some of the skills we will need to excel in college. All in all, we have had great learning experiences in the first two weeks. We are excited to begin our cluster projects next week!

This week we were challenged with the task of writing an essay discussing an ethical challenge related to music and technology. The ethics paper is one of our biggest assignments, and everyone in the cluster is exploring the various connections between ethics and music. We spent a lot of time at the UCSD Geisel Library researching on multiple topics concerning ethics in music and technology. It was really eye opening and we were exposed to many of the current issues the music industry has. Our topics include piracy, record labels taking a majority of artists’ profits, streaming services such as Spotify, and using algorithmic music composition software to create original music. We know our teacher fellow Kim is going to have a tough time choosing the top 3!
After spending nearly three weeks here at UC San Diego, living in dorms, waking up for class, living as an independent young adult has become routine. We have been getting accustomed to college-style classes, which are very different than high school classes. One main difference is that high school teachers take time to make sure students understand the material before moving on, whereas college professors expect students to be self-motivated to take the extra time to understand material on their own through study, or asking questions in class. We met our second professor, Shlomo, who is in the Music Department at UCSD and gave us an interesting lecture on the evolution of music.

On Wednesday we took a field trip to the Museum of Making Music in Carlsbad, where we learned about the evolution of different types of music and instruments in the United States. The museum featured many different types of common instruments like pianos, saxophones, and trumpets, as well as more unknown instruments like the theremin and the steel lap guitar, which we were able to play in the museum ourselves. It was very interesting to learn how different styles of music such as jazz, ragtime, and rock n’ roll evolved in the U.S., and were related to various social and cultural events of the time such as Prohibition and WWII.

This week, we have started to work on our final projects. We formed groups of three based on our strengths and interests to create projects of our own design using the programs and hardware we have been learning to work with in class thus far. In the beginning of the week, groups did a lot of brainstorming to figure out if our project ideas were possible. Towards the end of the week, we began honing in on our ideas and created plans for our projects that can be completed in the short amount of time we have left in Cosmos. Every group has a project idea and outline ready and we have all begun working on the first steps of our project. The project ideas are diverse and incorporate everything we have used so far from programming to synthesizers to robots. All of our projects involve using microcontrollers (Arduinos and Raspberry Pis) and softwares (Pure Data and Python) to create the beautiful organization of sound known as music. We are working closely with our professors and TA’s to bring our projects to fruition. We are excited to showcase our hard work on August 6th.
Our time at COSMOS has been leading up to this final week and our final projects. We have been working on our projects since week 3, and the experiences of most groups has been a rollercoaster of successes and subsequent issues regarding those successes. Most groups have had to utilize every member’s ingenuity and problem solving ability to their fullest extents in order to deliver a functional product at the end of this week. The process has been strenuous, but with the help of our professors, teachers and assistants, we have undoubtedly grown in our ability to troubleshoot, work as a team, and solve problems wherever they arise. We are all proud of the work that we have done, even if the result of our projects wasn’t what we had originally expected. The point of our projects was not to create a new invention to sell on Amazon but rather to display what we have learned in the short span of these four weeks. If in the end our project is much simpler than we had hoped, it is still more than what we had with us on July 10th.

Similarly, I can see that our cluster has grown in the “residential life” aspect as well. At this point in COSMOS, the nervous, guarded trepidation many entered the program with is nowhere to be found. There’s something unique about the way you form relationships when you live and work with a group in such a close environment. The amount of time spent bonding with suite-mates is entertaining and enjoyable, whether it be at dinner, during suite time, or programming. Inside jokes are made nearly every day, tying us all together into a huge family. It’s never a dull moment with our suitemates! Being able to experience residential life first-hand takes away a lot of the anxiety around living in a college-like setting in the future.

Continuing the theme of preparation for college, we have learned much about the college experience as a whole. These aren't necessarily things that can be taught in a classroom setting, so we are incredibly grateful that we had the opportunity to understand them now, as opposed to learning them in freshman year of college. These skills are things like; understanding how to manage time, making sure we arrive to the right place on campus each morning, stalking a banana from breakfast in our backpacks because we know that we need a snack to avoid falling asleep around ten o'clock. Also, learning how to have a balanced and nutritious diet has proved beneficial, especially since there is a vast selection of junk foods to choose from in an endless buffet for breakfast, lunch, and dinner.

Of course, COSMOS is (unfortunately) drawing to a close. As stereotypical as it sounds, time does fly. There was so much going on over the past month, so many new experiences and concepts, that at some points it almost feels like our brains don’t have enough RAM to process all of our experiences while they occurred. Looking back, however, we can all identify the differences between the kids that showed up on this campus four weeks ago, and the young-adults that will step out of it this saturday. We may not know where we will be going to college, what we will be majoring in, or really much of anything else about the future beyond the next six months. But we can unironically say that, due in large part to this program, we are prepared for whatever comes next.

Thinking about the final days of COSMOS makes us sad. Our cluster has grown a lot together since the very first day where we didn’t speak at all; to now where we can’t even stand being apart! We hope to see some of our very close COSMOS friends in college (maybe even UCSD). Though our time at COSMOS is coming to a close, we look forward to keeping in touch with the friends we have made and continuing to strive to learn more about what interests us. We appreciate the lessons we learned here and are excited to experience college in the future where we will continue to pursue all of our interests!