TELL US ABOUT YOURSELF:

Howard Wang,

* Canadian moved to US almost two years ago to seek higher education and pursue BS computer science at UCSD.
* Decided it would be beneficial to me based on prestige of CSE program, and its reputation as a STEM-oriented school also family was close by and weather was a lot better since it didn’t snow in JUNE.
* Chose this major because I loved STEM, particularly mathematics, but was more interested in learning about the ways in which mathematics could be applied to the real world, to create tangible solution to real world problems, rather than just exploring the theory behind it.
* It seemed computer science was the best way to go about that, and besides, coding seemed pretty cool at the time.

If asked about hobbies, personality:

* I try to live a well-balanced life, and my motto is that “every experience is worth it, and you can get something out of everything you do if you approach it with purpose”.
* I have a large range of hobbies and am not afraid to try new things and fail at them. For example, while I have pretty much been a guitarist and martial artist all my life, but I decided to try out piano, choral ensemble, gymnastics, rugby, volleyball and track and field, to really see if I could be good at those things, cause you never know until you try.
* In high school, I was a STEM oriented student, and yet I enrolled in theatre and dance classes, and even tested by chances at SPEECH and Model UN. While I wasn’t particular good at those things, many of those failures increased my confidence and my desire to improve!
* When I was choosing colleges for UCSD, I didn’t look for a college that was suited for my major or where I would fit in, I looked for a college where I would gain the most unique experience from. While Warren college was the place to be for STEM students, especially computer science, I heard that ERC had a really good writing program, and a solid community of international students where I could potentially improve my communication and interpersonal skills.
* Essentially I was prepared to take the difficult courses, because I knew they would eventually be beneficial to me.
* Just last year, I tried out Latin dancing for the first time, this included the cha-cha, salsa, and samba, put me in compromising and embarrassing situations, but boosted my confidence in the end.
* Other than that, my main hobbies include martial arts, and guitar. Currently, I am the performance chair for UCSD Wu Shu, a Chinese martial arts organization that performs by monthly request at on-campus cultural festivals (especially during Chinese New Year) as well as during major events such as the annual Martial Arts Expo. As performance chair, I am responsible for handling all performance requests by other organizations, which have in the past, ranged from local San Diego bio companies requesting Lunar New Year performances, to elementary school culture festivals. In particular, I am the main point of contact for these requests and my task is to choreograph each performance based on the requested theme, and lead my team through weekly performance practices until the day of the performance. As a team, we compete in collegiate tournaments annually, where schools such as UCLA, UC Berkeley, University of Maryland, UCI, University of Columbia come to compete.
* As a guitarist, I find every opportunity I can to perform gigs and open mics on campus. Part of musician’s club where we performed iconic songs ranging from Freddie mercury to Michael Jackson
* Overall, I live a balanced life and try every opportunity that comes at me.

WHY YOU WANT TO WORK FOR US?

1. I really admire the community you have built around project builders and hardware enthusiasts, especially the Hack-a-day social platform, and the concept of the design lab
2. It can make a complete stranger interested in hardware projects and want to build something on their own. I want to contribute to growing this type of community through my work, and really make people more aware of the potential of your platform.
3. Your software solutions are one of a kind and really apply well to this niche industry, and a lot of tech companies rely on this type of software to streamline their workflow and to accomplish the more difficult tasks such as acquiring resources and marketing their products.
4. Overall, your mission to centralize and provide an open access network that connects the electronic industry can be boiled down to a desire to help others and make their lives easier. In that way, your company really embodies one of my goals as a developer, and the way you achieve that goal, by establishing yourself in this niche way, is really in line with my own goals as a developer, which is to explore a problem by myself and find my own unique and improved solution.

For instance,

Throughout my first year here at UCSD, I have always thought of my major as just about coding and creating software.

I took the basic intro CS classes as any freshman did, and participated in occasional info sessions hosted by the CSE department and CSES.

Honestly speaking, I was prepared to just be implementing data structures my whole life.

Sitting in 3 hour long theoretical computation lectures often led me to question whether I was actually learning applicable knowledge.

Self-exploration and building team projects was the solution to my frustrations. I realized that the way influential individuals achieved their success in life was the same way students were ACTUALLY expected to learn during their time in college: through self-exploration, trial and error, and by “breaking the rules”.

I realized that sitting through tech talks wasn’t going to make me a better engineer. I had to actually explore aspects of my field outside of my personal and academic comfort zone and with my own abilities.

My first hands-on experience with this was assembling my first Raspberry Pi, which was a difficult task for me at the time. By taking my time to read documentation, and explore the various aspects of this device, I gained a lot of extracurricular knowledge about how a computer works under the hood, things that I never would have learned in my classes, but which is invaluable in the software industry.

From then on, I began to explore possibilities of building my own projects. This ranged from creating my own websites and web apps to reading sensors with microcontrollers and working with real time databases. I strayed from the academic mindset and adopted a passion for playing around with new software and hardware, as someone who loves Computer Science and problem solving should.

This past Winter, I got more involved with IEEE, the Institute of Electrical and Electronics engineers at UCSD and competed in my first Quarterly Projects competition, where my team and I created a medically assistive IoT device using Raspberry Pi, and placed 3rd out of 20 teams. It was probably the most unique, fun and productive project I have worked on since I came to UCSD.

In summary it’s is because I want to continue this idea of self-exploration, that I am applying for this position. I realized that the process I went through has really opened my mind to the possibilities within my major and the industry and now I want to explore these opportunities further and challenge myself.

TELL US ABOUT YOUR WORK EXPERIENCE

CSSMA

1. So in high school I started out a complete NOVICE at computer science. The most coding I had done was probably formatting my Homework submissions in LATEX. While I was passionate about mathematics and problem solving, I also really wanted to contribute to my community in a more substantial way that didn’t just involve volunteering at local events.
2. An opportunity came when one of my friends in the competitive math community introduced me to CSSMA, a student run start-up that was looking to recruit local helpers to advertise and run a math competition for middle school students. After I familiarized myself with their vision and mission, which was aimed towards hosting local mathematics competitions to middle school students as a way to revitalize the competitive mathematics community and help academically-inclined students reignite their passion for real-world and competitive mathematics, I joined as the marketing and outreach staff with hopes of making an impact and actually accomplishing something helpful.
3. Sacrificing hours of my personal and academic life, I made in-person trips to each elementary school with the purpose of networking with their principal and math department teachers to help pass out flyers and advertise this competition to their students. We were well-received by many schools who praised us for initiating this project and providing this opportunity to their students.
4. Initially, I was working with one other person on my team, but eventually we recruited I 7 other of my classmates to help out as mentors and coordinators of the actual event, set in April.
5. We distributed tasks evenly to create the problem sets and rounds (Individual power round, team round, and fun trivial session, problems ranged from middle school standard curriculum to more tricky competition problems) for the competition using latex document sharing software (shareLATEX). We worked collectively, and used google docs and sheets to planned out expenses and food, book the venue, and successfully hold the event at my local university.
6. Actual competition: over 40 students came to compete and win custom certificates and fun prizes. We made the event free for the students and provided them with lunch. Overall, it was a very successful event, and a very fun leadership experience.

LUMINERVA

1. Luminerva started out as CSSMA, I first volunteered as a marketing manager for CSSMA, and then joined Luminerva when the chair of CSSMA decided to hire people to work for another startup, Luminerva.
2. Company transformed from CSSMA to Luminerva which was a platform dedicated to making education fun by utilizing a gaming platform to teach players.
3. Joined as a problem creator, similar to CSSMA, used LATEX, but eventually, moved tasks involving JAVA as we were planning to make an andriod app. So over the summer, I familiarized myself with JAVA using online tutorials and courses. Then I implemented my first JAVA Fx program that can let the user play connect 4! (methods used: check win or tie, check if column is full, update board, front end GUI with back end functions to update and check game board). I also created a random problem generator that would create multiple math problems at a time, such as simple divide, add, multiply equations, and equations involving area of triangles.
4. Essentially, my task was to brainstorm and prototype new problems and puzzles the player might encounter on their RPG journey.
5. I also worked in a team to debug some of the front-end code created using JAVA FX. This included running simple unit tests with JUNIT and documenting errors, dealing with compile runtime erorrs, etc.
6. We communicated as a team via slack, and Facebook, to create milestone meetings, set up workflows, and to resolve problems in general.
7. The problems my team ran into mostly involved unmotivated individuals, as it was an unpaid job and we were still students enjoying our summers. We tried to resolve these issues by setting up team meetings and socials where we would just hang out instead of work. This built better team relationships and allowed certain people to invest more into this project.
8. The highlight of my experience, more than anything, was learning how to program in JAVA, help create a functional game, and learning valuable teamwork skills and how to resolve relationship problems with others.

LEADERSHIP (CURRENT):

Currently, I hold leadership positions in three on campus student orgs. Firstly, I am the performance chair for UCSD Wu Shu, a Chinese martial arts organization that performs by monthly request at on-campus cultural festivals (especially during Chinese New Year) as well as during major events such as the annual Martial Arts Expo. As performance chair, I am responsible for handling all performance requests by other organizations, which have in the past, ranged from local San Diego bio companies requesting Lunar New Year performances, to elementary school culture festivals. In particular, I am the main point of contact for these requests and my task is to choreograph each performance based on the requested theme, and lead my team through weekly performance practices until the day of the performance.

Secondly, I am the Director of external affairs for UCSD A Cappella Choir, a friendly group that provides the opportunity for students to sing in an A Cappella setting that requires no auditions and does not judge based on singing ability. Our goal is to help our members improve in technical aspects of singing while at the same time having fun. In the future, we hope to be able to compete in professional A Cappella competitions and perform as a recognized group on campus, proving that an inclusive environment is better overall. As the webmaster for my org, I created the organization website acachoir.ucsd.edu via UCSD ACSWEB services, for the main purpose of keeping members up to date with our most recent events, and provide a document-sharing interface for sheet music and song parts.

Lastly, and most recently, I became a IEEE Quarterly Projects mentor for this Spring 2019, and am currently helping out the QP Chair host the event by setting up work-a-thons, directly aiding the QP teams on their projects, and attending weekly mentor meetings. I am also planning to run for QP chair for the next school year so I can implement my ideas for changes to the QP process, and build more leadership skills.

I mainly became involved with IEEE this Winter Quarter, when I competed with a Quarterly Projects team involving two other students Eric Xiao and Jeromey Klein. This was one of my first REAL team-based project building experiences involving a real world theme and task, and professional hardware and software building materials, and it was an indelible experience that I learning a lot from. As a team, we created a medically assistive IoT device using Raspberry Pi, and placed 3rd out of 20 teams. As an individual, I gained valuable interpersonal experience, as well as technical experience working with new hardware and software such as IMUs, Raspberry Pi’s, and Real-time Databases. I consider this project experience my gateway to IEEE, and the desire to become more involved.

Immediately following Winter quarter, I applied to become a QP mentor where my first task was to rate each applicant to determine Spring quarter’s QP team members. I am currently in charge of 3 out of roughly 20 teams who were accepted, helping them with technical problems, and questions about materials, parts and feasible plans and milestones for their projects.

WHAT ARE YOUR GOALS AS A STUDENT/DEVELOPER/ENGINEER?

Currently, my motives are self-exploration, and to test my limits and my creativity as an engineer. Ever since I have become more heavily involved in team project building experiences, it has been my goal to seek out what others know and work together to complete difficult tasks, but with the overarching goal of expanding my own skillset in the process.

Everything I have done and all of my related experiences have been ones I sought out with the intent of either gaining more experience than I started out with, or because I was really passionate about it from a hobbyist perspective. A good example is: Before I even started coding, or even knew what a developer was, I was a very passionate student of mathematics. In high school, I was the MOST involved with my competitive math community, which I believed was the ONE thing I could do better than everyone else. I took the hardest math courses and I just loved the feeling of solving a problem using very elegant and sensible logic. Everything made sense in the field of mathematics and there was usually a good solution, and finding that solution was the most enjoyable part. Often my friends and I would debate on competition math problems that were particularly quirky or had a twist that stumped us. We would then race to see who could find the solution that one problem we collectively missed during the competition. Those were my most memorable and fruitful learning experiences because I was conducting a self-exploration on a topic that I was genuinely intrigued by and had a burning desire to figure out. In the process, I gained more confidence in my math skills and became a more effective problem solver. So basically, it is THOSE kind of experiences that I am seeking.

What are your biggest strengths and weaknesses?

My biggest strength is dedication and perseverance.

Staying up for days on end to complete projects that I love to work on, where I really envision the end result and want to achieve it, not only to prove that I can do it, but to really test my creativity and what I can come up with. Same goes for when I’m working on academic programming assignments

Weakness: can be stubborn, when I stick my mind to a task, it is hard to convince me to stop halfway, or to completely change direction halfway through, even though it may be a better solution. Overall, I am determined to get the task done, which can be considered stubborn minded to some people. A good example of this was LA hacks:

* I fervently wanted to get the front end Interface completed so I can better picture the USER expereicne and adjust my next steps accordingly. Partner said Front end didn’t have to be perfect, just good enough to showcase the product.
* I disagreed and focused more time than necessary on the graphics and UI, while ignoring the functionality. The cost was although the app ended up working in the end, there were a lot of bugs and edge cases I didn’t test when it came time to showcase. One of these was the app was displaying the same series of trips every time you renavigated the trip. So irionically it took away from the UI in the end.
* Should have heeded partner’s advice and not been so stubborn. Since he joined my team, I thought I had the final say in everything was fine, but have to stop and consider all sides of the issue, and value every conflicting opinion.

HOW TO DEAL WITH DIFFICULT PROBLEM THAT CAN’T SOLVE IMMEDIATELY:

Evaluate resources, brainstorm approaches, and come up with something new.

* Look at available documentation, try to understand all aspects of what I am tackling so I don’t make unnecessary mistakes that lead to more errors and more confusion.
* Try to come up with an un-convoluted solution, one that does the job, but does not need to be perfect, Polishing can be done later.
* Don’t stick to convention, try to come up with something that works for you, doesn’t matter if it is simple or lacks sophistication. Often unique solutions work better.
* Coming up with a unique and personal solution is often more effective, and a more rewarding learning experience.

Ex: Currently a part of a grad student’s research and project team working directly with our school’s local Scripps institute of oceanography to utilize local surfer recreational community to help collect data about the coastal regions of San Diego beaches. Our main goal is to collect as much information about the ocean as we can with limited technology we have under less than ideal circumstances. We use IMU technology embedded in Surf board fins to detect changes in elevation of surfer, and get their GPS locations. This is so we can calculate significant wave height, direction and wave density in coastal regions. Normally, it is difficult to collect this kind of data as scientific Buoys are only able to be utilized in deeper parts of the ocean. Collecting coastal wave information can lead to more accurate predictions of changes in the coastal ecosystem, more data on potentially predicting natural disasters and climate change. Currently, my goal is to calculate the wave direction, come up with unique solution of using imu to determine wave density from every angle, and deciding which angle yields the greatest density, which must be where the wave is coming from.

POTENTIAL TEAMWORK ISSUES AND HOW DID I RESOLVE THEM:

* Luminerva- lack of motivation: The problems my team ran into mostly involved unmotivated individuals, as it was an unpaid job and we were still students enjoying our summers. We tried to resolve these issues by setting up team meetings and socials where we would just hang out instead of work. This built better team relationships and allowed certain people to invest more into this project.
* LA HACKS- Conflicting opinions: I fervently wanted to get the front end Interface completed so I can better picture the USER experience and adjust my next steps accordingly. Partner said Front end didn’t have to be perfect, just good enough to showcase the product.
* I disagreed and focused more time than necessary on the graphics and UI, while ignoring the functionality. The cost was although the app ended up working in the end, there were a lot of bugs and edge cases I didn’t test when it came time to showcase. One of these was the app was displaying the same series of trips every time you renavigated the trip. So irionically it took away from the UI in the end.
* Should have heeded partner’s advice and not been so stubborn. Since he joined my team, I thought I had the final say in everything was fine, but have to stop and consider all sides of the issue, and value every conflicting opinion.
* Quarterly Projects- dealing with individual teammates: Mostly had to organize the team and keep individuals motivated, this required self-sacrifice, using my own free time to work on project, and really build the team’s trust in me as well as my skills. Seeing that someone else put a lot of effort into the project can really motivate everyong else and boost team morale. Making personal sacrifices and compromises often resolves the issue.
* Also dealing with people individually by giving them what they want, but also communicating to them with reason if they overstep their bounds or suggest a troublesome idea. For example, Jeromey wanted to work on both Code AND designing 3D printed parts for the assistive spoon, but he had no expertise with web app development, and didn’t know python, so it was hard to teach him halfway through. To resolve this, I just praised him on his design skill and reiterated the importance of his role to the project. Also sacrificed my own time to teach him what me and other teammate were working on, in terms of developing the python code and web app code, database, etc.

Learned: Communication has to be effective, and to all members, make sure you are not the weak link in the group, or the confusing/mysterious one that no one really trusts to do important tasks because they never contribute to discussion. If someone is attempting to dominate the workflow, don’t resist, but communicate with them is they are being selfish or onerous.