

A BLUEPRINT FOR 'ENGINEERING' SCHOOL SUCCESS

The ultimate guide to
finding internships and balance
as an engineering student

by RUPERT WILSON II

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2019

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NSBE
Marlan and Rosemary
Bourns College of Engineering
UC Riverside



CABE
Council for The Advancement
of Black Engineers



Author Biography

“Sharing knowledge with others is critical for advancement.....”

In writing *A Blueprint for Engineering Success*, **Ruperd Wilson II** has combined his childhood passion for engineering, and desire to give incoming freshmen the tools that he wished he had when starting out in engineering school.

In 2019, Ruperd earned his Bachelor’s of Science Degree in Electrical Engineering from the Bourns College of Engineering at University of California Riverside (UCR). He is a member of the prestigious Tau Beta Pi engineering honors society.

As a rising engineer at Raytheon Space and Airborne Systems, Ruperd thinks outside the box working with highly specialized teams of engineers delivering new and innovative satellites, radars, and other aerospace related systems and products.



Ruperd first became interested in engineering as a child. He was fascinated with robotics, building things, and figuring out how things worked.

His father an engineer, exposed him to the field of engineering throughout his childhood. He was part of an Engineering Academy and Robotics team in high school. These experiences helped him decide to pursue Electrical Engineering as a career path as a junior/senior in high school.

For his college senior project, he and two classmates created an amazing machine that had the ability to detect strokes in patients by analyzing brain waves. Then when the stroke is detected it sends a text message to alert family members and emergency responders!

At UCR, he was a member of the National Society of Black Engineers (NSBE) where he served as the public relations chair and as a student mentor.

He was an active member in the Institute of Electrical and Electronics Engineers (IEEE) and the Council for the Advancement of Black Engineers (CABE).

He enjoys playing the guitar, traveling, and sharing the outdoors with friends and family. Ruperd is dedicated to self-improvement and helping others achieve their maximum potential.

Ruperd currently resides in Los Angeles California.

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Author's Note

I began the journey of writing this book during the spring quarter of my Junior year. I had been successful in engineering school during my first three years. I had maintained a high gpa and had even landed two internships. However, I was constantly feeling stressed and feeling as if the other areas of my life including my physical fitness, hobbies, and social life were suffering. I knew for a fact that I was not the only engineering student that was experiencing these things. My friends felt similarly. However, I noticed that I did have a select set of friends that seemed to be doing all of the things that I was yet they were less stressed and had more balance in their life.

This group of people seemed to be able to land internships and research positions with ease, maintain high grades, hold leaderships positions all without burning out or letting their social life suffer. I wanted to know how. I wanted to know what these people knew so that I could implement these life hacks into my life. So I began a journey to decode all of the strategies that this select group of people used to land internships and research positions, maintain high grades and have balance in their lives. My hope was that future engineering students will read these interviews and tap into more of their own potential as engineering students. If every engineer can be just 10% better, then the world will be much better off because of it.

Note about Student Biographies

The student Biographies were written at the time of the interview and do not necessarily reflect the most up to date information about the student.

Acknowledgments

Thank you to all of the students that gave me the opportunity to interview them. They offered their time and knowledge to help prepare future engineering students for success. This book would not have been possible without their generosity. Thank you to Elliott Emmer for being a great resource and helping me connect with BCOE administration. Thank you to Gustavo Correa who consistently encouraged gave me and gave me suggestions for how to improve this book. Thank you to the Academic resource center for proofreading this book. Thank you to Valeria Garibaldi for helping me clarify my vision for this project and for being a great resource for constructive feedback. Thank you to my parents for always being a source of positivity and encouragement during the creation of this project.

Foreward

Becoming an engineer is not easy, that's no secret. After all, engineering is, quite literally, rocket science. In colleges and universities across the nation, various programs assist engineering students in navigating their studies from day one to diploma. Activities such as orientation sessions, bridge programs, enhanced advising, and peer mentoring to office hours, tutoring and supplemental instructions for selected courses all expand the student experience. Still, the four-year graduation rate in engineering remains below 40%. At UCR, 58% of our incoming first year students graduate within 4 years and 70% complete their degree within 6. While this is much better than the national average, we are eager to do even better!

Having experienced the power of peer mentoring, I am pleased to see that one of our own students, Rupert Wilson, compiled a set of interviews with engineering students to help those who are just setting out on the path toward their careers. Through his interviews with Vanessa, John, Gogol, Augie, Timothy, and Gustavo, Rupert shares ideas and tips on how to make the most of your college experience and launch your career.

Persistence is one of the qualities Rupert shares with each of the students he interviewed. He also benefitted from the encouragement of many mentors. Dr. Ernie Levister, in particular, deserves a note of thanks for his patronage of Rupert's endeavors. I encourage you to identify your own mentors while working closely with the faculty, academic advisors, and student services staff who are here to help you succeed. Finally, I hope you will also be inspired to follow Rupert's example and find ways to share the tips and insight you develop as a student with the next generation of engineers.

Welcome to your study of "rocket science" and to developing the skills and knowledge that will enable you to make a lasting difference for yourself and future generations through engineering!

Marko Princevac Ph. D.

Associate Dean and Professor of Mechanical Engineering
Marlan and Rosemary Bourns College of Engineering, UCR

1

Landing Internships with LinkedIn

with Vanessa Coria

Vanessa is a fourth-year Chemical Engineering major at UCR. She is the Vice President of the Society of Women Engineers and an Intern at Tesla Motors. She is passionate about using her creativity and management skills to execute impactful projects.

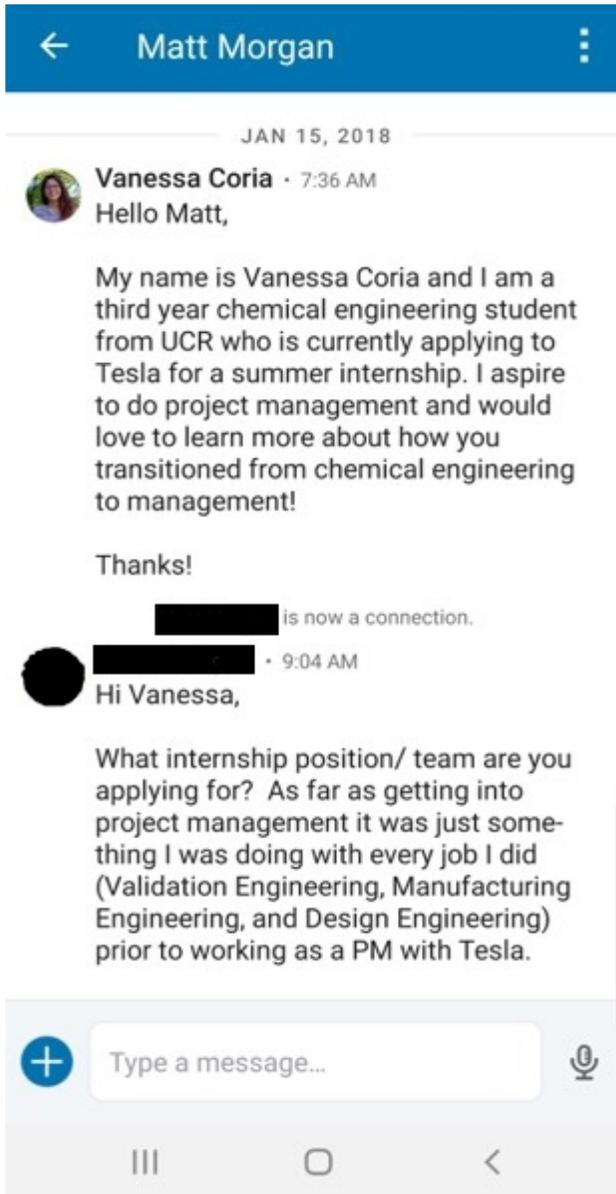
Q: What motivated you to pursue engineering?.

A: During my childhood, I would spend countless hours helping my mom in the kitchen and this ironically sparked my interest in engineering. Through cooking, I learned that I love creating things with my hands. I was also very creative as a kid, so engineering seemed like a natural fit for me. I want a career where I can use my creativity and technical skills to build whatever I want.

Q: What is your strategy for landing internships?

A: LinkedIn is the ultimate resource to get whatever you want. I didn't realize this until I went to an engineering networking conference. There was a speaker at this event that was teaching LinkedIn networking strategies. He described how to market yourself on LinkedIn to attract opportunities and it really opened my mind. After I cleaned up my LinkedIn page, I began searching for internships on the website. I first went to the pages of the companies that I was interested in and looked through their UCR alumni's page. On LinkedIn you can view all your school's alumni that work at a specific company. I was trying to find someone that I had something in common with on the Alumni pages. For example, I found one alumni that ran cross country in college. Cross country is an activity that I also did in high school. I messaged this person and said, "I saw that you did track and field at UCR. I love track and field and ran for a number of years. I was wondering if you could tell me more about your experiences in cross country and how you apply that in your daily life now?" So I continued to reach out to alumni like this and it really helped me establish genuine relationships with mentors and job recruiters.

One of these relationships that I built eventually helped me land an internship at Tesla motors.



Q: What exactly did you do to get companies to start reaching out to you on LinkedIn?

A: By posting or messaging people on LinkedIn on a weekly basis, you can increase the number of views on your profile page. For example, on the first day of the week I connect with five new people and send them a message that says something like, "My name is Vanessa, this is what I like to do, and I was wondering if I can learn more about what you do and schedule a phone call with you." On Tuesday I make a school or job-related post about my research projects or interesting things I have learned about in class. On Wednesday I share someone else's post and comment about what I thought about it. On Thursday I like someone else's status and comment on it. The basic philosophy is that the more active I am on LinkedIn, the more my activity will show up in the feeds of the people I've connected with, and they will be more likely to view my profile.

Q: A lot of college students struggle with finding out exactly what they want to do with their major. How did you figure out what you want to do?

A: Exploring the opportunities in the engineering clubs helped me learn what I am good at. For example, being the outreach chair for the Society of Women Engineers (SWE), made me realize that I really enjoy planning events and managing people. Once I realized that I enjoyed this type of work, I used LinkedIn to reach out to different people in my network that do similar work in industry. I eventually met someone who graduated with a Chemical Engineering degree, but is now a project manager for a large company. He told me about the work he does and how he enjoys traveling around the world for his job. The work experiences he was describing excited me and sounded like something I wanted to do. In conclusion, I figured

out what I want to do by exploring different opportunities in the engineering clubs on campus, finding which of those positions I liked the most, and reaching out to my network to find people that did similar work.

Q: What advice would you give the freshman version of yourself?

A: As an engineering student, you will have challenging and exhausting nights. When you go through these, remind yourself that the next four years will determine the next 40 years of your life, and keep going.

2

Landing Five Internships

with John Pham

John Pham is a fourth year Computer Engineering major with a laundry list of impressive accomplishments. He has had five internships at companies that include JPL, AT&T, the Aerospace Corporation, and Amazon. In addition, as an undergrad he has held both research and teaching positions at UCR. He has a tremendous amount of volunteer and leadership experience at UCR and prides himself on being a community builder.

Q: What Motivated you to pursue engineering?

A: In high school, I wanted to be an art major. When the time came to apply to college, I got into a few art schools. However, after discussing it with my parents, I decided that it would be better for me to pursue my other interest which was engineering and make my art endeavors a hobby. I came into UCR as a mechanical engineering major, but soon switched to computer engineering after experiencing citrus hack. I fell in love with hackathons, because they gave me an environment where I could use my creativity to build whatever I want while also learning very relevant skills for industry.

Q: It seems like you know exactly what you want to do with your career, but how did you get to that point?

A: I honed in on what I wanted to do with my career during my freshman year. In this year, I went to as many hackathons as I could. They were all within two-to-three hours of UCR and I enjoyed spending my weekends learning new things in an environment where there were hundreds of people doing the same things. Hackathons are a great place to experiment and find out what you enjoy doing. Also, all these hackathons were incentivized with prizes from different sponsors. These sponsors are usually engineering companies. I know people who landed internships just by impressing these sponsors with their hackathon projects.

Q: Do you think hackathons are useful for people that aren't computer engineering majors?

A: Yes! Although they tend to be geared toward niche majors

like computer engineering and electrical engineering, I think that anyone can benefit from the skills that you learn at hackathons. For example, if you are a mechanical engineering major, you probably have not developed strong programming skills in your classes. At a hackathon, you have 24-to-36 hours to work on a project that will help you develop your programming skills, potentially opening up new opportunities for you in different industries like robotics.

Q: What is your strategy for finding internship opportunities?

A: Your first internship is usually the hardest one to get, because you generally do not have a huge amount of experience on your resume when you are searching for it. At this stage, applying blindly online is not usually the most efficient way to land an internship. You will have a much better chance of landing an internship if you speak with a recruiter in-person.

I landed my first internship as a freshman at NASA's Jet Propulsion Laboratory by talking to a recruiter at a career fair. I did research on all of the companies that were going to be at that career fair beforehand and wrote notes on each company in my padfolio that I took to the fair. It is important to appear knowledgeable about the companies that you are speaking with at career fairs. You should never ask the companies what they do. Instead, you should explain to the recruiters what you like about their company and how you would be able to contribute to their mission. For example, when I approached the NASA recruiter, I said something like, "Hi my name is John. I am really excited about Nasa's Asteroid exploration robotic spacecraft project and how it utilizes so many emerging technologies to complete its mission. In fact, I worked with similar technologies at my research position

here at UCR." I also apply to all the companies that I plan on talking to before I go to the career fair.

Last, don't worry if you don't meet all the requirements for the jobs or internships that you are applying to. Some people become discouraged and end up not applying at all. Apply to as many internships as you can while gaining experience outside of the classroom and before you know it, you will have an internship.

Q: How did you land a research position as a freshman ?

A: The contact information for all the UCR engineering professors is online so I sent an email to all them saying, "I'm a freshman engineering student, I'm interested in doing undergraduate research. Can I meet with you next week to talk about possible opportunities?" Out of about 300 professors, three got back to me and I picked one of them.

The research symposium is also a great way for students to land research positions. It usually happens twice a year. All the professors that are currently looking for students to work in the labs, attend this event and look for potential recruits. It is essentially a job fair for research positions.

Q: What is your motivation for taking on so many projects?

A: In school we have to pay in order to learn and earn a degree. I wanted to find a way to flip the script and get paid to learn. That was the big motivator for me. I knew that if I landed an internship or research position, I would be able to have fun learning while also getting paid.

Q: How do you organize your schedule to stay on top of all your responsibilities while maintaining high grades as an engineering student?

A: I treat my classwork as if it were a nine to five job. During my freshman year I told myself that if I can work productively on school work, club work, and any other school related work between the hours of nine and five, then I can use the rest of the day to do whatever I want. So instead of procrastinating throughout the entire day, I have a specified amount of time where I am laser-focused on work, and then I treat my extra free time as a reward. Every night, I update my google calendar with the tasks that I need to get done the next day and I estimate the amount of time that they will take to complete. This way I will know exactly how much work I will be getting done during the hours of nine to five.

Q: How do you relax?

A: In the morning, I like to meditate, because it's a way to focus on myself at the very start of the day and it also boosts my motivation. If you meditate first thing in the morning, you've already accomplished one thing which gives you momentum to accomplish the rest of your tasks throughout the day.

3

Extreme Time Management

With Gogol Bhattacharya

Gogol recently graduated from UCR with both a Bioengineering and Electrical Engineering degree. While he was a student at UCR he held various research positions and contributed to a published research paper. He was also an undergraduate student instructor for a machine learning class put on by the Electrical Engineering department

Q: How did you become interested in engineering?

A: I really became excited about engineering in middle school when I joined my schools Lego robotics team. I also started learning programming at around this age which further increased my interest in engineering.

Q: Why did you choose to take on two engineering degrees at the same time?

A: I think that the purpose of engineering is to solve complex problems. The more tools that I have to help me solve those problems, the more effective I will be as an engineer. I see each class that I take as an extra tool that I can add to my tool belt. In addition to the double major, I also have taken extra programming and math classes. They are interesting to me and one day I may be able to leverage this knowledge to solve complex problems.

Q: You mentioned that you take between 20-and-24 units every quarter to pursue both engineering degrees. How do you handle that workload?

A: So in order to handle the workload the main thing I focused on was minimizing the amount of time that I spent on each assignment. I realized that I was spending countless hours trying to figure out problems that I was stuck on. To save myself from this wasted time, I developed a strategy where I start an assignment and go through all the problems that I can do fairly easily. The second I get stuck on a problem, I switch to a different assignment. I keep doing this until all the simple problems on my assignments are done. Then I work on the harder problems either in office hours or with my study group in order to get through

them faster. This strategy saved me a significant amount of time and allowed me to take on a heavier workload.

4

Creating a Vibrant Social Life

with Augie Montelongo

Augie Montelongo is a senior Mechanical Engineering student at UCR. He is currently the Chief Engineer for UCRs Aerospace Systems and has served as a project manager for ASME and SAE Aero. He has also been a member of UCRs Battlebots team and the UCR Rocket Project.

Q: You've always had a very vibrant social life even though your schedule is packed with some many other commitments. What are some of the "life hacks" that you use that allow you to do that?

A: I treat my social life just like any other commitment. I have a specific amount of time each week that I schedule in my google calendar that is allocated to being social. For example, during my sophomore year I would get together with friends every Tuesday . We would go to a local taqueria to take advantage of the Taco Tuesday reduced prices. My social life is a little bit different now. I no longer do taco Tuesday every week, but I have prescheduled time in my google calendar each week for being social. Organizing my social life in this way has decreased my stress a lot, because I no longer have to worry about when I will have time to be social. Everything is already prescheduled. It gives me something to look forward to each week and helps me avoid burnout.

Q: Are there any other ways that you avoid burning out as an engineering student?

A: Being involved with engineering projects and getting real hands-on experience has helped me stay motivated as an engineering student. When I am overloaded with assignments and am experiencing a tremendous amount of stress, I ask myself why I am putting myself through this. I really enjoy the projects that I work on, so I tell myself that doing well in school will help me earn a degree so that I can spend my career working on projects like these. Classroom assignments are often somewhat monotonous and boring, but projects allow me to explore the

world of engineering in a more engaging and exciting way. This helps me keep my focus on the light at the end of the tunnel.

Q: Do you have any advice for the freshman version of yourself?

A: I would have told myself to spend time getting to know my professors. This not only helps you build connections for your career but also helps you learn more efficiently. It is sometimes difficult to really get a good grasp of the material in a class if you only learn from the lectures. If you go to office hours, the professor will tailor the material to better fit your learning style.

5

Get High Grades Without Stress

with Timothy Lam

Timothy Lam is a senior Mechanical engineering student at UCR. He has served as the president of The American Society of Mechanical Engineers (ASME) and has held three different engineering research positions. In addition, he was a mechanical engineering intern at Rockwell Collins and serves as the Vice-President of the Tau Beta Pi engineering honors society.

Q: How did you land your research position as a freshman?

A: I felt intimidated to take on engineering projects and research when I was coming in as a freshman because I felt like I was not knowledgeable enough yet. This all changed when I found a mentor in the ASME mentor program. He not only gave me great advice on how to navigate college but he also helped me land my first research position. Since he was three years older than me, he had a much larger engineering network than I currently had. He introduced me to one of his friends that happened to be a graduate student in an engineering lab. After talking to this grad student about my interests for a few hours, he invited me to meet the professor of the lab and I eventually ended up landing a research position in his lab.

Q: How did you land your internship with Rockwell Collins?

A: I spent a tremendous amount of time looking for a summer internship during my junior year and actually ended up applying to about eighty different internships. Out of those eighty applications I received four callbacks and two internship offers. Getting an internship from online applications is really just a numbers game. You need to apply to a massive amount of internships if online applications are your main job hunting medium.

Q: You have an extremely high GPA. What strategies do you use for studying?

A: One strategy that is not emphasized enough is breaking up an assignment into smaller chunks. For example, when I was

interning at Rockwell Collins, I was working on a control module for a plane and my manager split it into different sections and gave each section to a different engineer. A homework assignment can be completed in a similar way. If I have a homework assignment that is six problems long, I will do one problem a day for six days which makes the work much less stressful and tedious. Sometimes when I have a lot of material to learn, I will get together with a couple of friends and split up the work. Each person will master a portion of the material and then we will all come together and teach each other what we learned. I also put all my exams, project deadlines, and homework deadlines into my Google calendar as soon as I find out about them. I do this so I can visually see how much time I have to prepare for my exams and can schedule study time accordingly.

Q: How do you keep your motivation high?

A: My dream job is to be an aerospace engineer at Boeing. Focusing on my end-goal helps me stay motivated because I know that I am currently learning the skills that will allow me to be an effective engineer at Boeing in the future.

Q: How do you relax? How do you de-stress?

A: I find it very beneficial to have both engineering and nonengineering social groups. I am a part of a few non-engineering related clubs and I find it relaxing to spend time with these people exploring other things that I am interested in. It gets my mind off of work and helps me become a more well-rounded people.

6

Landing Research Positions at Other Colleges

with Gustavo Correa

Gustavo Correa is an fourth year Electrical Engineering major and has held research positions at UCR, M.I.T, and UC Berkeley. Gustavo has also had two engineering internships and has served on the board of UCRs IEEE club. In addition to this, he has won numerous awards at various hackathons throughout the United States.

Q: What were you doing at M.I.T this summer?

A: This summer I was a summer research Intern at M.I.T. I was specifically in M.I.T's media lab which focuses on taking researchers from different fields and working on interdisciplinary projects. I was helping some of the professors with their research but was also very focused on making as many connections as possible while I was there. I reached out to as many engineers as I could from M.I.T and the surrounding companies so that I could get a feel for what they did to help me further narrow down what I want to do.

Q: How can students find similar opportunities?

A: Numerous high-profile colleges offer summer research positions and internships that undergraduates from other colleges can apply to. If you google, "UCLA internships for undergraduates" or "M.I.T internships for undergraduates", a list of opportunities will appear. This strategy can work for almost any university.

Q: You mentioned that you had another research position this summer at Berkeley. How were you able to land that additional research position?

A: After I finished up my research at M.I.T., I went out to the Bay area to visit a friend. I was only planning on staying there for a week, but I wanted to make the most of my time while I was there. I was reaching out to people from Silicon Valley companies, and the surrounding universities through LinkedIn and came across a professor from UC Berkeley who does similar research to the what

I do at UCR. I reached out to him and asked if we could have a lunch meeting. After talking to him for a few hours at our lunch meeting, the Professor ended up inviting me to spend the rest of my summer in his lab. The only reason that any of this was possible however, was because I made a massive effort to talk to as many interesting, knowledgeable people that I could during the summer.

7

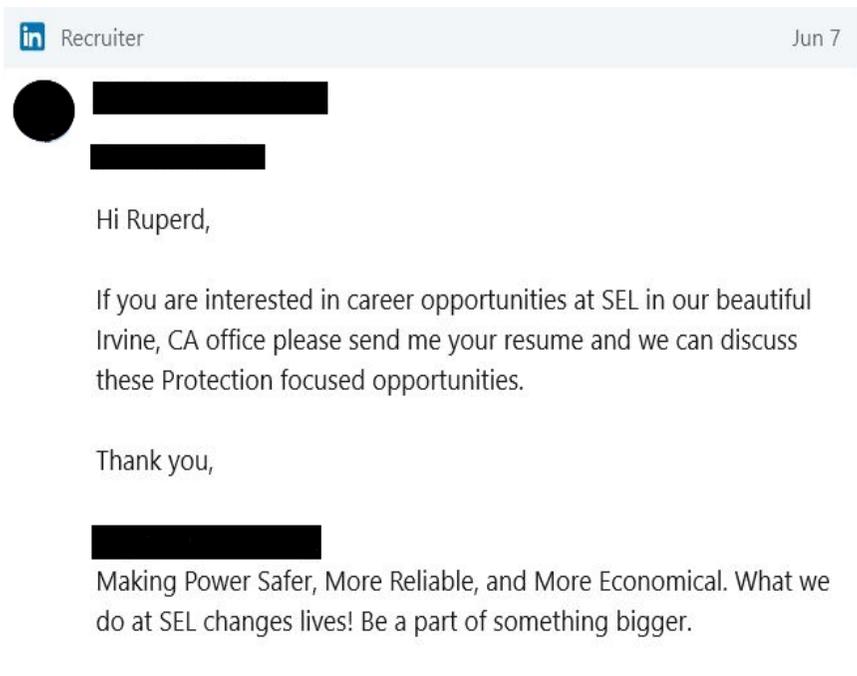
Dominate Engineering School

With Ruperd Wilson II

Ruperd Wilson II is a fourth year Electrical Engineering student at UCR and the author of this book. He has held internships at Southern California Edison and The Office of the President of the University of California. During his senior year he worked for a local startup as a Sales Engineer and will be working at Raytheon following graduation. Ruperd is passionate about using his talents to better the lives of others.

Q: How do you find internships and job opportunities?

A: I don't limit myself to the career fairs at UCR. I also go to job fairs at other universities and job fairs that are held at the headquarters of companies. There are numerous engineering companies that hold job fairs at their company's headquarters, and you can easily find out about them by doing online searches. I landed my job at Raytheon by going to a career fair like this, and I have friends who have landed jobs at companies like Boeing, Northrup Grumman, and Genentech by using the same strategy. It is also extremely important to have a polished LinkedIn profile. I have received messages from recruiters on LinkedIn about interview opportunities just because they came across my profile and liked what they saw.



In addition, there are several programs like the INROADS program and the CODE2040 program that will help engineering students find internships. These programs use their industry connects to make it easier for their students to get interviews. During my sophomore year I applied and go into to the inroads program. They connected me with a few different employers and I eventually landed an Information Technology internship for the summer.

I landed my current college job by using a LinkedIn strategy. At the beginning of my senior year, I was interested in finding companies in the Riverside area that were working on projects that I found exciting. I found a small start-up in Ontario that manufactures engineering equipment and wrote the C.E.O. a letter. The letter mentioned almost nothing about myself, but detailed why I found the company exciting and why I thought what they were doing was important. I sent this letter to the C.E.O. on LinkedIn and it helped spark an ongoing relationship. After a few months of speaking with the C.E.O. about his company and our common interests, I realized that I needed a job for the remainder of the school year. I wanted a job where I could combine my experience in engineering as well as my interest in business. I sent the C.E.O. another letter that detailed my technical and management experience and described how I thought I could add value to his team. He sent me a prompt response and told me that he would like to have me come work with him as a technical sales employee for the rest of the school year.

Q: How do you find a balance between work, extra curriculars, and academics as an engineering student?

A: I have adopted the philosophy of having at least one

event on my calendar each month that I can look forward to. This helps me stay motivated to finish all my tasks because I know that there will be a reward at the end. I also consistently meditate and exercise. These activities both serve as escapisms for me, help get my mind off work, and help me maintain a healthy body and mind. Another thing that helps me stay balanced is studying with friends. When I study with a group of friends, I maximize my productivity by getting social interaction and studying done simultaneously. My life is not always perfectly balanced and stress free. I know that sometimes I will have to allocate essentially all my time to classwork or towards a project. If imbalance in my life is temporary, I am ok with it.

Q: What was your strategies to maintain high grades?

A: I do best in school when I am going to office hours consistently. During my freshman year, I would sometimes do my homework entirely in office hours because I knew that I could finish the homework more efficiently if the TA was sitting right next to me. I would ask the TA a question as soon as I got stuck.

I also like the strategy of studying in 20-minute intervals. I'll study very intensely for 20 minutes, take a five-minute break, and repeat. This helps me because I have five minutes to check my phone and to do everything that I want to do while I'm studying.

Q: What are your biggest takeaways from writing this book?

A: I learned that there are many creative ways to finding Internship and research opportunities. Applying online works, but It is helpful to utilize other strategies to land opportunities

faster. More specifically, I learned that LinkedIn is one of the most powerful and underutilized tools for landing jobs. I also learned that it is possible to handle a large workload with minimal stress if you take the initiative to execute the work in a strategic manner. These strategies can consist of splitting up your homework into smaller assignments or relying on office hours and study groups to finish homework quicker. Lastly, I learned that it is possible to find a comfortable balance as an engineering major by being intentional about spending time with friends as well as doing things to maximize your mental energy like working out and meditating. Overall, I learned that it is possible to have both an amazingly successful and fun engineering school experience.

