INTERVIEW QUESTIONS FROM UNC ALUMS

Mitchell Cobb *(Avionics, Instruments, Guidance, Navigation & Control Engineer at Blue Origin)*
At Maxar [Technologies, a space technology and intelligence company], the interview questions were pretty much "so tell me about your research", which was very easy. At Blue Origin [Jeff Bezos' spaceflight company] they asked me to do things like derive Euler's equations of rotation starting from conservation of angular momentum with pen and paper. So, it was a pretty wide range. I think that most interviewers would probably tailor their questions to the candidate. I've also heard that a lot of interviewers focus on participation in student projects outside of the classroom in an attempt to judge the intangibles like teamwork and organizational/time management skills.

Max Gordon *(Business Intelligence Engineer at Amazon)*
Most of the interviews I had after grad school were more towards technical questions such as questions you might find on HackerRank or other technical interview websites for SQL or Software Development type jobs.   One I commonly use today and is used in software development interviews is called LeetCode and *Cracking the Coding Interview* book. LeetCode has a variety of data structure and algorithm questions that are commonly asked in interviews which may be helpful for those interested in software related jobs. *Cracking the Coding Interview* is a textbook that covers similar data structure and algorithm questions and is a great resource that talks about the job process as well (negotiating offers, company specific questions, etc.).

Lawrence Pan *(Engineering Manager (Batteries) at Google)*
My experience is there are of course role-related technical questions, but also behavioral questions, such as experiential questions ("tell me a time when you had to (insert conflict, dilemma, etc.)...") and hypothetical questions ("what would you do if (same)...."). Also a hot topic these days is diversity, equity, and inclusion, so there may be questions on how you champion this.

Riley Buchanan *(Data Scientist at Credit Suisse)*
1. Tell me about a time you decided to learn something without being told to
2. Tell me about a time when your teammate or coworker didn't agree with you, and how did you handle it
Everything else is pretty specific to data science roles, like what technologies I've used for what projects, what I would do when faced with hypothetical problems, etc.

Drew McAllister *(Data Scientist at Afiniti)*
1. General Questions: e.g.: Tell us about your research. What made you interested in data science? What makes you a good fit for this company?
2. Basic SQL table joins: Given some tables of data what is the SQL to get some piece of information?
3. Bayesian stats problems: eg: Suppose you have a deck with only three cards:
   a) One is white on both sides
   b) One is black on both sides
   c) One is white on one side and black on the other
   The cards are put in a bag and shuffled around. You draw a card and place it flat on the table, and reveal that the face up side is black. What is the probability that the face down side is also black?

4. General Stats/Problem Solving: eg: You are in a casino with $50, and unfortunately a bus ticket home costs $100. In this particular casino, the only game available is roulette with double-or-nothing

betting options. Given that the likelihood you win any particular bet is less than ½, what betting strategy will maximize the likelihood that you get $100 and can take the bus home? E.g. repetitive bets of a small amount? One massive bet of $50? Some dynamic betting amount?

5. Math followed by Pseudo Code: given a problem, e.g.: You have two variables X & Y that are both uniformly distributed at random between 0 and 1. What is the average distance between X and Y ? Write down the integral that would solve this, and if you can, solve it analytically. Pseudo-code an experiment to estimate the value of this integral. What is the uncertainty associated with this estimated value? How does it depend on the number of samples taken?

Erik Forseth *(Senior Quantitative Research Analyst at Graham Capital Management)*
So the thing is, quant finance and data science interviews really vary quite a bit, so I'm not sure how much useful detail I can give. Typically for a fresh grad, the interview will consist of some or all of the following:

1. If graduating with a PhD, the interviewer will typically ask about the candidate's dissertation work. The goal here is to see how the candidate communicates complex or unfamiliar ideas to a technical non-expert. The interviewer also wants to get an impression about the candidate's unique contributions to his/her field.
2. The interviewer will also want to know why the candidate is interested in leaving academia and why they're drawn to this job in particular.
3. There's often some kind of coding proficiency test -- using in the language of the candidate's choice -- but Python, R, and C++ are probably the most commonly sought after languages.
4. There may be brainteasers and mental math questions, or oftentimes questions involving probability, or maybe Fermi estimation type questions.
5. Finally, nowadays some kind of proficiency in basic statistical modeling is often desired, so it's good to have familiarity with linear regression, covariance estimation, basic hypothesis testing, stuff like that. This was one area where I felt I didn't get much exposure via the standard physics curriculum, so I did a lot of self-study.

Harry Hayworth *(Investment Operations Associate at UVIMCO)*
1. Can you highlight a few things on your resume experience-/education-wise that feels it would be beneficial in this role?
2. What jumped out to you most on the job description?
3. What are some must-haves in an organization and role for you?
4. How do you manage detailed work and review of that work?

Chelsea MacLeod *(Image Processing Engineer at BlackSky)*
What's something you think your advisors might say you could be better at?

Alex Burnette *(Data Analyst at Oracle Cloud Infrastructure)*
1. What do you consider to be your greatest achievement (professional or non)?
2. Why did you choose our company?
3. How do you schedule your day?
4. When you have different tasks, how do you prioritize the order in which those tasks are done?
5. Tell me a moment when you had a problem with a customer, how did you resolve it?
6. Tell me a moment when a project was behind schedule and what you did to solve it.
7. Tell me about the biggest failure of your professional life.

8. What do you consider to be the main reasons a project succeeds or fails?
9. If there were no computers, technology, internet etc., what would your job be? What career would you want instead?
10. Think of the impact you had in any given situation. Impact is crucial. How did something specifically benefit from having you engaged?
11. Consider situations when you haven't succeeded as you had hoped. Why did it happen and what did you learn from that experience?

Tom Concannon *(Staff Applications Engineer at Synopsys, a Si technology company)*
1. What are your greatest strengths and how do those qualifications make you a good fit for this position?
2. What do you consider to be your biggest weakness? Are you addressing it now and, if so, how?
3. What do you consider your proudest accomplishment and why? Be as specific as possible.
4. Tell me how you think other people would describe you.
5. Where do you see yourself in five years? In ten years?
6. Tell me about a time you had to resolve a conflict in your work or your life? What did you do?
7. What are your hobbies?
8. Why should I hire you?
9. How does your physics background give you an edge?
10. Could you write the truth tables for the AND, OR, and NOT gates on the white board?
11. Why did you leave teaching? Would you be willing to teach training classes here?
12. Describe the basics of the physics of the transistor.

Bailey Canter *(Systems Engineer at Raytheon)*
1. Why are you interested in this role?
2. Explain more about "this" role? (referring to experience candidate listed on their resume) the interviewer is looking for a deep understanding of the experience listed and the ability to talk technical about their work
3. How comfortable are you in programming? A lot of jobs for a physics degree will require some level of programming. In the industry, I have found that the most common programming languages are Matlab, Python, java and C++ (listed in order of the most common languages I have found in the industry).
4. How well do you work in a team environment and in independent investigations?
5. When working in a group project, which role do you usually take? For example, are you the organizer, the delegator, the computer wizard etc.
6. What did you find to be the most challenging aspect of the role (from candidate's resume) and how did you overcome it?
7. Walk me through your thought process in solving a problem
8. Where do you see your career in five years, and how can this role help you achieve that goal?
9. What would your dream job be?
10. Explain the Doppler effect.