Quant Talk by CSEA

- Quant ← from Quantitive Calculations, modelling etc
- The big names like GS, JPMC are sell-side firms. Mutual funds , etc too
- The buy-side ones are Tower Research, Quadeye, Graviton.
- Big firm vs small firm?
    - Big firms like GS JPMC, the roles are a lot more structured and work is divided more properly. Eg: Analyst → Associate → VP → MD (if you do good as a VP). Merit-based ladder. You work on a particular role for a longer time.
    - Small firms have startup-like work culture. A close knitted team and everyone contributes to everything. More fluid roles. Teams of 2-3 people.
- 90% of the firms are in big cities. NY, Chicago, London, Amsterdam, Gurgaon, Hongkong, Singapore are the major hubs!
- International firms don’t hire straight out of college mostly. If they do, its mostly Indian roles.
- 4 categories of roles:
    - Developers — similar to SDE, fullstack roles, efficient system with high optimisation. More focus on development and less on market.
    - Researchers — relatable to DS/ML/AI roles. Read papers and doing research, new algorithms, using Big Data.
    - Strategists — work with C++, C#. Writing algos which are used to trade in the market. CS + Market both knowledge. Bridge bw finance and CS
    - Traders — work with Python for basic analysis. They manage the portfolios and very less coding work.
- The work life balance:
    - More demanding than SDE roles. But not as bad as people have made it look.
    - More developer type job → more flexible
    - More trader type job → more discipline required, Wake up according to the market
    - No work on weekends and evenings. Sudden things don’t pop up.
    - Work life balance much nicer in Europe than USA and India. (his opinion)
- Masters is a much better option to get into work in US. But coursework.
- Experience matters much more than extra education.
- Skills required for Fresher roles:
    - Do NOT expect a lot of financial background. Taught on the job.
    - Should be able to understand numbers and has a good mathematical background.
    - Strong knowledge of stats, maths, etc.
    - Resume cannot play much of a factor here. You can put up mathematical background if you have. (courses, olympiads, etc.)

    - Aptitude questions + puzzles etc asked in interviews.
    - They see if you have interest in the industry and have tried to understand it.
- SDE → Quant?
    - for developer roles, it is very easy and similar.
    - for trader roles, it can be difficult.
    - from google, microsoft type companies, very likely that you can go to quant developer roles.
    - from trader roles to sde, you can switch in the early years. Later on, it becomes difficult.
- If you want to spend 4-5 hours per day, Quant roles not for you
- ML/DL experience will help certainly in the Quant Researcher role.
- Not many good resources online for HFT, Quant algos. Internship is a much better way. No HFT shares their algo online
- There is a clause preventing you to switch from HFT to another HFT. Not applicable if you want to go to SDE or Investment Bank.
- For fresher jobs, 3-6 months you cannot switch companies.
- For intern, any project in the field is very helpful. Just show that you have interest in the field. DataScience projects also help.
- Probability, Maths, Aptitude
- Quant strategist → in big firms brainstorming, writing codes for mathematical models, simulating, tweaking, model documentation, get them approved. In a more of a small trading firm, find problems and fix and put out code very fast according to the day.
- Trader role — tough to get out of college, make contacts from few years of job and move into trader role.
- Probability more of puzzles and solutions. Not really high theoretical knowledge.
- Strict regulations are there on trading firms, and its good since computers shouldn’t affect the market too much. Anyways they will stay profitable.
- The HFTs don’t fire out of the blue. The backup options are always there, since HFT me ho gaya toh kahi bhi ho jayega. Companies can vanish in 5-10 minutes but very easy to find jobs anyways.
- Branch, CPI doesn’t matter really.
- HFTs write mostly in C++. Input is the market data. Process it and generate signals. Execute the decisions. The code has to save every microsecond they can.
- In a smaller firm, you understand the business in a small time.
- In bigger firm, you will make more contacts and learn the work culture.
- Learning is good in both types, depends on your interest.

- SDE vs Quant in the long run? GO WHERE YOUR INTEREST LIES.
- Quant firm salaries don’t grow as SDEs grow. In quant firms, a lot of the pay depends on bonus (on how much you make for the company). SDE salaries grow a lot.
- If you are good at Quant, you can make millions (much more than SDEs).
- Investment banks are not allowed to do HFTs. (like GS JPMC)
- Hedge funds use other people’s money and then trade and invest on the client money. They get management fees and a percent cut on the returns.
- Proprietary funds use the founders money.
- The senior Quants or the very top Quants are PhDs or have a lot of experience. PhD pehle uske baad Quant. PhD not for Quant.
- Motivating factor for Masters should not be Quant. It can help you as a ticket to US but not much in the field itself.
- Bonus system exists for IBs in India as well. As you spend more time in industry, bonus helps a lot.
- You can have your own personal training portfolio but there are restrictions definitely.
- QuadEye doesn’t have such rules since a manual person cannot do such high freq trading.
- In a small firm, you work on all 4 quant roles almost at once. In big firms you can make the switch easily.
- For risk management, you can do a certification which will help a lot.
- For Quant researchers, AI ML is a must.
- Quant researcher and strategists role are open for straight out of BTech.
- Pros:
    - Intellectual satisfaction, solving tough problems.
    - ownership of the product
    - compensation
- Cons:
    - Finding value for your work. is it just money or you are doing something for the world?
    - longer work hours compared to sde roles.
- It is difficult to choose between Systems and Quant right out of college. You can try different roles for a few years and settle on the one you like. Don’t try to hit the right one straight out of college.