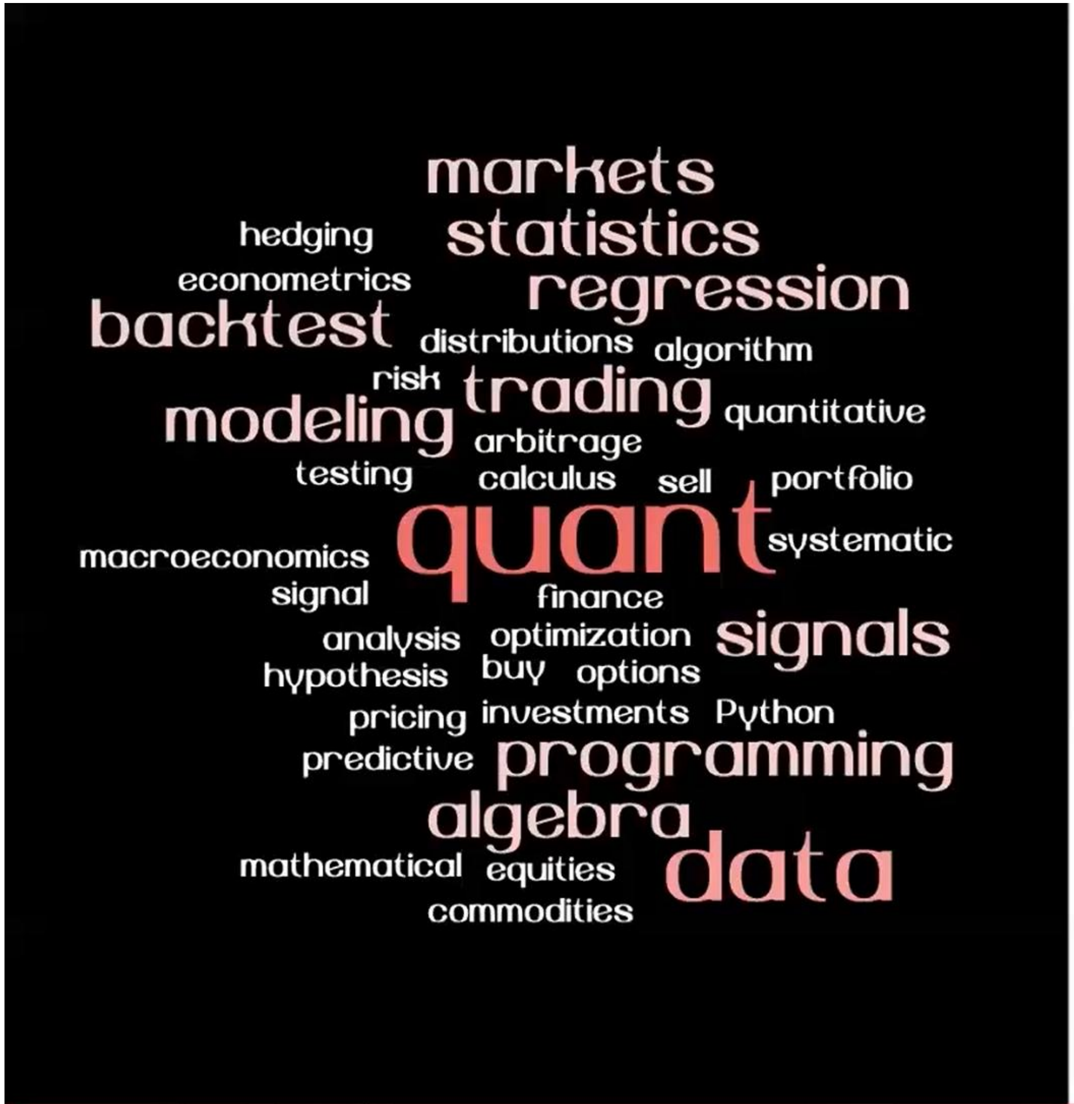
Carnegie Mellon University

Master of Science in Computational Finance

Career Paths for Quants



Agenda

We will discuss…

- Industries & organizations who hire quants
- Types of roles (e.g. front office, middle office)
- Top career paths
- Recruiting with MSCF

Industries for Quants

Sell-Side	Buy-Side	Other
Investment Banks	Prop Traders	FinTech
Market Makers	Hedge Funds	Financial Advisory
Stock Brokers	Mutual Funds	Government Regulators
Commercial Banks	Pension Funds	Rating Agencies
	Asset Managers	Consulting
	Insurance	Internet/Tech

Employers Who Hire Quants

- **Investment Banks**
- **Hedge Funds/Proprietary Trading**
- **Asset Management**
- **Fin Tech/Analytics/Consulting**

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Roles on the Buy-Side & Sell-Side

Front Office	Middle Office	Back Office
Sales	Risk Management	Quant Developers
Trading	Quant Researchers	Data Scientists
	Strats & Modeling	

Desk Quants, Structurers

Portfolio Management

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Top Career Paths

1. Sales and Trading
2. Quantitative Research
3. Strats & Modeling
4. Portfolio Management
5. Risk Management
6. Data Science

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Sales & Trading

- **Fast paced** & competitive
- Able to **handle pressure**
- Interest in **financial markets**
- **Mental math** & probability
- Game theory
- **Programming**
- Pattern recognition

Image: https://blog.quantinsti.com/making-career-algorithmic-trading/

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Sales & Trading

Sample Titles

- Quant Trader
- Jr. Options Trader
- Algorithmic Trader
- FICC FX Trader
- Rates Trading Associate
- Sales and Trading Analyst

Employers

- Investment Banks
- Akuna Capital
- Chicago Trading
- SIG
- Spot Trading
- Sun Trading
- Transmarket Group
- Wolverine Trading

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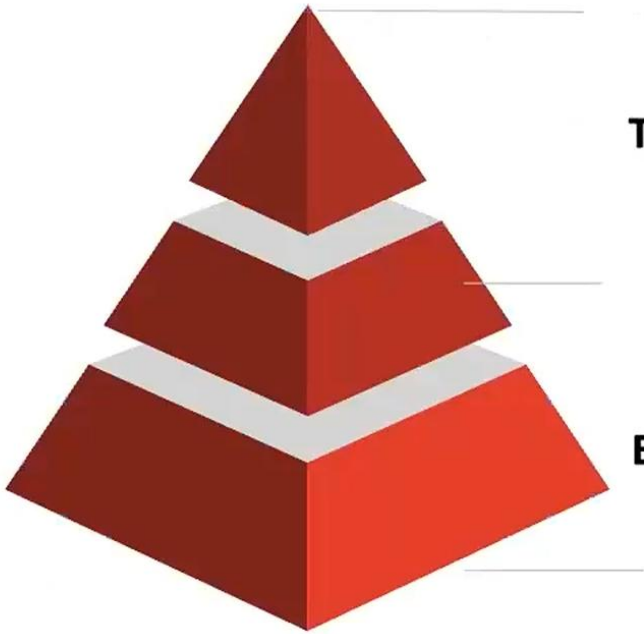
Quantitative Research

- Organize and analyze **large amounts of data** to identify causal relationships in the market
- Construction and development of quantitative **models**
- Hypothesis testing
- **Long-term** projects
- Linear algebra, stochastic calculus,



Soft Skills
- Communication
- Teamwork
- Curiosity
- Humility

Technical Skills
- Programming
- Data Science
- Probability
- Statistics
- Mathematics

Education
- Relevant Research experience / projects
- Educational background
- Experience

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Quantitative Research

Sample Titles

- Quantitative Researcher
- Associate/Analyst
- Market Quantitative Analyst
- Associate - Global Markets
- Engineering Analyst
- Systematic Fixed Income Analyst
- Sr. Quantitative Analyst

Employers

- ArrowStreet Capital
- Cubist Systematic Strategies
- Citadel
- Goldman Sachs
- Millennium Advisors
- Jump Trading

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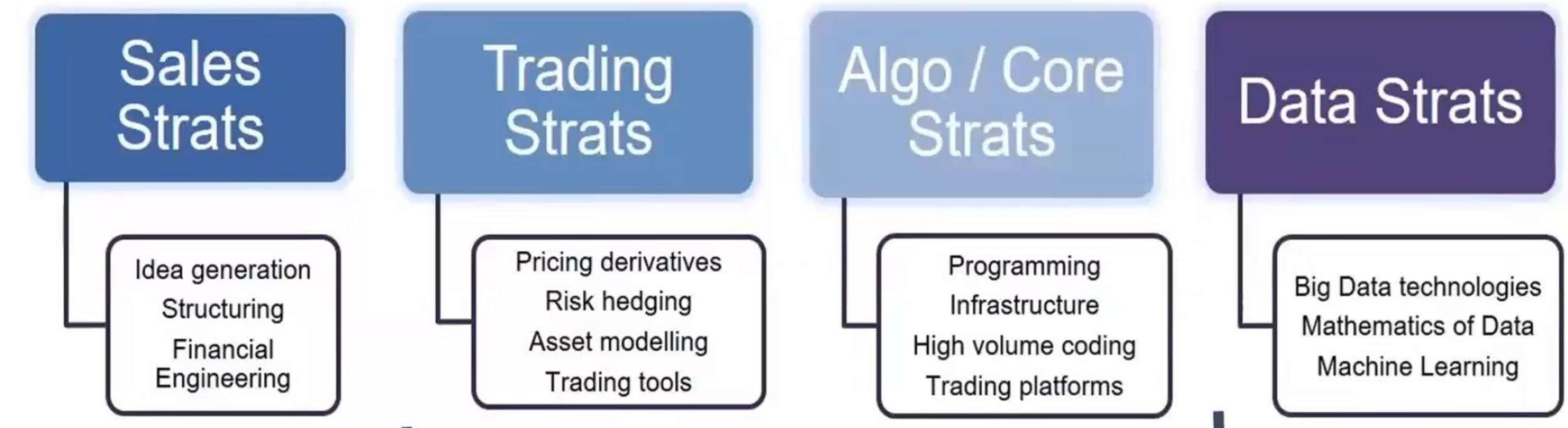
Strats & Modeling



More Quantitative

More Coding

Image: https://www.efinancialcareers.com/news/2022/05/strats-jobs-goldman-sachs

Strats & Modeling

Sample Titles

- Associate, Quant Analytics
- Corporate Treasury Strategist
- Credit Structuring and Derivative Analysts
- Fintech Strategist
- Trading Strategist
- Fixed Income Strategist

Employers

- Investment Banks
- Axioma
- Bloomberg
- CRISIL Global Research and Analytics
- Federal Reserve
- Freddie Mac

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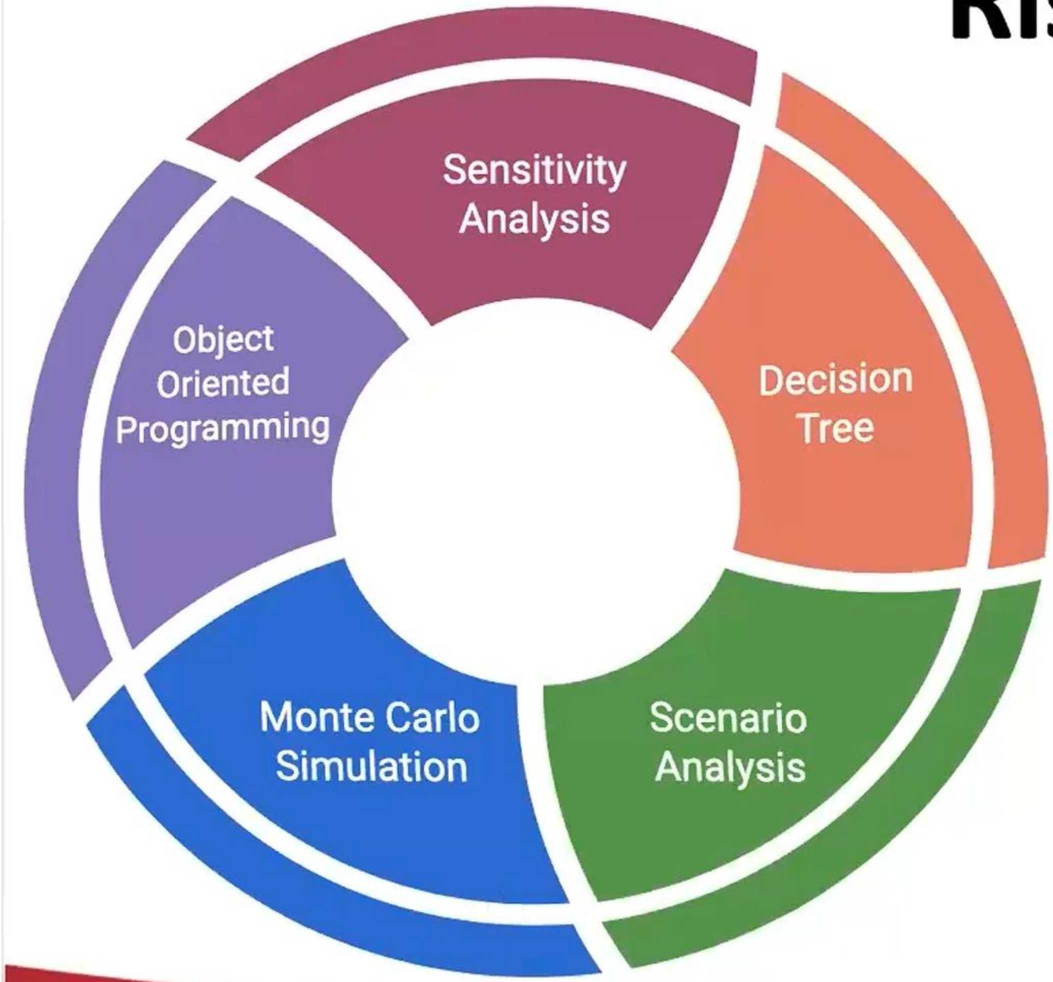
Risk Management



- Middle office
- **Advise investment decision makers**
- Create and validate **statistical risk models**
- Many kinds of risk
  (e.g. credit, market, liquidity, counterparty)
- Strong **communication skills**
  (articulate complex ideas- details and big picture)
- Awareness of **financial markets**

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Risk Management

Sample Titles

- AVP, Franchise Risk Architecture
- Associate, Treasury Risk
- AVP, Asset & Liability Management
- Market Risk Analyst

Employers

- Balyasny Asset Management
- Bloomberg
- Citi
- CME Group
- Intercontinental Exchange
- PwC
- State Street

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Portfolio Management

- **Macroeconomics**
- Capital markets
- **Portfolio construction & optimization**
- Asset allocation
- Knowledge of **investment tools** (e.g. public & private equities, fixed income, structured products)
- **Machine learning**

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Portfolio Management

Sample Titles

- Portfolio Management Analyst
- Portfolio Construction & Risk Analyst
- Jr. Portfolio Manager
- Investment Analyst

Employers

- Investment and Commercial Banks
- AQR Capital
- Blackrock
- Citadel
- Millennium Capital
- Kohlberg Kravis Robert (KKR)
- Western Asset Management

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Data Science

- Back office with quant developers
- **Messy, unstructured, and large datasets**

  (e.g. billions of entries)
- **Alternative data**

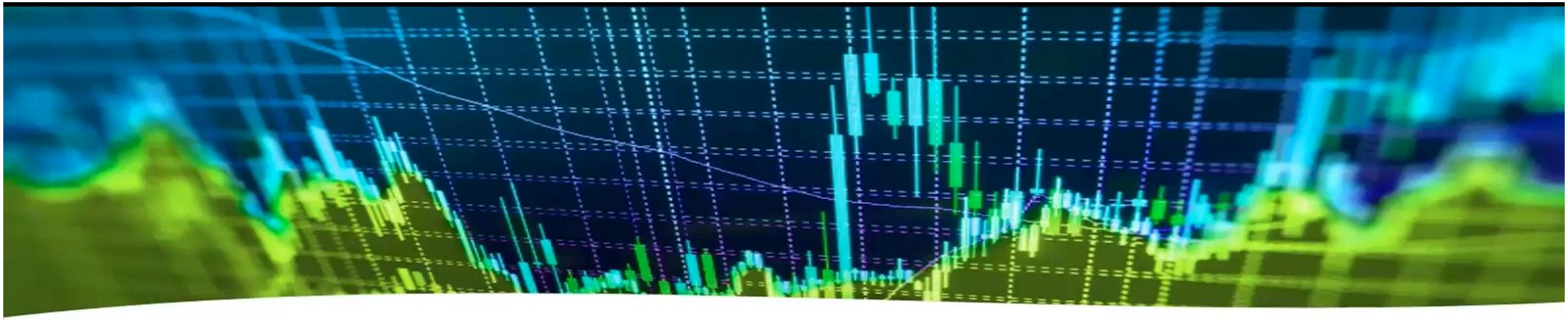
  (e.g. social media feeds, emails, smart devices)
- **Skeptical** of existing assumptions & creative
- AI/ML, database management, research
- Strong in **statistics**

Python (NumPy, pandas, matplotlib), **R, SQL**

Techniques include exploratory data analysis (EDA), time series, & parallel programming

Machine learning, NLP, neural networks, reinforced learning

Interpreting, visualizing, & explaining the story behind the data



Continue your career research on MSCF's website!

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