

▲ dsacco on March 22, 2018 | parent | context | favorite | on: Hedge-fund managers that do the most research will...

Renaissance Technologies has completely automated the process of signal discovery.[1] They don't hire researchers to manually derive novel insights or trading models from data, and they don't really bother with exclusive sources of data. Instead, they hire researchers to improve methods for *automatically* processing vast amounts of arbitrary data and extracting profitable trading signals from it.

When most funds say they're "quantitative", what they really mean is that they use huge amounts of data to inform fundamentally manual trading strategies (this includes most of the places widely considered to be "top" firms). They develop trading algorithms, and those trading algorithms are often successful. But the algorithms are developed *manually* and then deployed. Their researchers and engineers actively seek out new sources of data and try to compete on novel sources of untapped information. But the reality of what happens is that they simply drown in the data. They can't clean it or process it nearly fast enough to maintain long term trading strategies, nor can they even begin to find a way to automate the trading strategy extraction. If you're working with hundreds of terabytes of data, you cannot selectively formulate hypotheses and test them. It's far too slow. You will find dramatically fewer novel insights than a fully automated process.

In other words, they're a step above traditional "fundamental" hedge funds, but they focus on the wrong problem (but not for lack of trying!). In contrast, the truly successful quant funds have automated the data processing and feature extraction pipeline end to end. The data is a pure abstraction to them. They don't bother with forming hypotheses and trying to find data to test them, they allow their algorithms to actively discover new correlations from the ground up. So many quantitative funds advertise how much data they work with, and how they have all these exotic sources of data at their disposal...but the data does not matter. The models for the data do not matter. The mathematics of efficiently processing that data are what matters.

As a result of their consistent profitability, most of the jobs you see listed for the really successful funds (if they have a website) are not "real" in the strictest sense of the word. You can apply to them, but they only keep active careers pages to attract the best researchers. Their only incentive to hire is to 1) keep someone who is actually exceptional from joining a competitor or 2) keep an academic researcher from re-discovering their work when they seems like they're getting close to it. This is why they primarily focus on quantitative PhDs in information theory, high energy physics and computational mathematics (especially information geometry).

To be completely frank, Renaissance is an outlier, but not just because of their returns. They're an outlier because of how public they are. Most of the funds with comparable returns not only don't take any outside investor capital, they only have 25 - 50 employees. They virtually never hire because they don't have to. If your work is fundamentally interesting, novel and applicable to what they're doing (even if you can't immediately see why), they will call you.

1. Other more secretive (but equally successful) funds have done this, but they are much more under the radar.

▲ valdiorn on March 22, 2018 | next [-]

As someone who has worked for one such secretive hedge fund in the past, and has for a long time been very interested in Renaissance, I'd be curious to know what your source of this information is. Any chance you could share some more insight?

▲ dsacco on March 22, 2018 | parent | next [-]

Sure.

1. I'm friends with multiple people who used to work at Renaissance, and I've directly spoken with folks who are currently there (among other, similar firms).
2. I've read the research published by professors and post-docs before they were hired.
3. I have first hand experience developing forecasts for various market research firms and many hedge funds. I've seen first hand what the difference is between the firms that say they're quantitative and the ones that *are* quantitative.

Not to discourage you (and you probably already know this) but: since you've already worked in the industry, Renaissance is very unlikely to take you seriously as a candidate. I'm not sure if that's what you meant when you said you're interested, but I figured I'd put it out there.

In any case, contrary to popular belief it's possible to connect the dots on what firms like RenTec do. But just having a high level idea of how they work isn't nearly enough to replicate their success. Their success relies on a large number of interdisciplinary scientists cooperating with the support of an incredibly specialized infrastructure. Getting the cliff notes on how they achieve e.g. dimensionality reduction doesn't come close to cutting it.

▲ tomp on March 22, 2018 | root | parent | next [-]

Would things like "dimensionality reduction" and other cutting edge ML techniques at least *help*? As in, help you become a better "manual" quant researcher or help you develop shitty (relative to RenTech), but still profitable strategies?

Do you have any other keywords? "Learning from few examples" comes to mind...

▲ georgeek on March 22, 2018 | root | parent | prev | next [-]

There is also something else: some funds have become so good in putting the right orders in the book that they don't need statistics so much to generate alpha.

▲ tomp on March 22, 2018 | parent | prev | next [-]

Do you mean G Research? Not sure that one really qualifies as "secretive", they've been recruiting from my Masters programme at Oxford years ago (albeit under a different name).

▲ zechs on March 22, 2018 | prev | next [-]

They automated signal discovery in what kind of data? I have heard their use of unconventional data sources is the source of their success, not automated signal discovery.

▲ dsacco on March 22, 2018 | parent | next [-]

No, every quantitative firm uses unconventional sources of data. That doesn't meaningfully differentiate them (at least, not anymore). For example, Two Sigma has an entire division devoted to sourcing and processing "alternative data." But Two Sigma is not at all comparable to firms like RenTec.

The funds I'm talking about (including RenTec) take in as much unstructured data as they can possibly find, almost indiscriminately, and they tune their processing pipeline to the point that it requires neither manual classification nor

munging. In most cases, a trading strategy is sufficiently multidimensional that any particular set of data can be completely public. Exclusive data is helpful, but not required. In many cases people become too dependent on exclusive data and lose sight of the methodology.

This is precisely what I mean: many people think that these firms differentiate based on the sources of data they use. They do not. They differentiate on their ability to automatically extract signals hiding in plain sight. Whether or not the data is public makes very little difference, because the signals come from tens of thousands of indicators combined together.

▲ autokatalyst on March 22, 2018 | root | parent | next [-]

You mentioned these firms are typically smaller in headcount, use private capital, and generate similar returns. Any insight on how they're targeting asset capacity for their meta-strategy approach? The medallion fund, until recently was capped around 3-4 billion [1]. I wonder, if the quality and quantity of data itself, and the models built on that data, are subordinate to the data processing IP as you say, can this type of trading be done at smaller scale, either as an individual or handful of people? I've been out of the industry for a bit, but infrastructure and data costs were the main (financial) hurdles for startups, particularly in the high frequency space.

Are there any firms outside of finance using an analogous approach to data processing and signal construction?

[1] <https://www.bloomberg.com/news/articles/2017-08-16/renaissan...>

▲ avn2109 on March 22, 2018 | root | parent | prev | next [-]

First, thanks for writing these long and detailed comments; I find them very interesting and probably a lot of other people do too.

Second, you mention knowing the names of various comparable firms to RenTech. Can you name some of those here?

▲ IBM on March 22, 2018 | prev [-]

How scalable is RenTec? Can they go up to 100B in AUM? 200B?

▲ MagnumOpus on March 23, 2018 | parent | next [-]

No they can't. I think they have order of magnitude of 10bn of their own money in their good strategies (Medallion et al), and another 10bn-ish of external money in their bad/stale strategies (which are still among the better hedge funds and can charge 1%+10).

But reputedly they neither allow external money into Medallion nor do they let employees compound their existing stake in the fund but pay out ginormous 20%-40% annual dividends exactly because the strategy is not scalable.

▲ ycombobreaker on March 23, 2018 | parent | prev [-]

Why would they need to?

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