MODULE 3 UNIT 3
Video 2 Transcript

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NIR VULKAN: In this video, Hans-Jörg von Mettenheim will share his experiences and knowledge on the topics of application programming interfaces, or APIs. He would also provide a little bit more details about programming languages and about employing programmers, by highlighting the skills that are required and the challenges that one can potentially face.

What role do APIs play in algorithmic trading?

HANS-JÖRG VON METTENHEIM: So using APIs, or application programming interfaces, is very important for successful algorithmic trading business. That's almost the very definition of algorithmic trading, that you have some kind of automated trading going on, or at least that you are able to automate your trading. It doesn't necessarily mean that every trade should be carried out without human supervision. Actually, my strong belief is human supervision will always be needed for the foreseeable future. But using automation through an API allows you also to assess the robustness of your strategy. So have you really thought about every edge case that might occur, or do you still leave something to discretion?

You should really try to get the discretion to a minimum. Your asset as a quant is really to say: "Okay, we have no emotion in this trading process. Our thoughts and our knowledge has been built into the model in the research phase. But once the model is up and running, we don't touch it, except if we assume that something has fundamentally changed that our model would stop working."

So talking about APIs, you have APIs for different types of operations in an algorithmic trading strategy. So very important part is typically the data-collection part. So definitely, this should be automated. The importance of good-quality, of high-quality data cannot be overstated, because that is what goes into your model. So, my suggestion would be, there you should invest, you should invest into a reliable high-quality data provider.

Another area that I've already talked about is the trade automation. What is for sure, you cannot expect software to be error-free. Some companies may claim they deliver error-free software. My take on this is error-free software simply doesn't exist. At some point in time, you will encounter an error, and to fail gracefully is something that you should build into your algorithms from the start on.

Are some platforms better suited to different types of systems?

HANS-JÖRG VON METTENHEIM: In the end, I would say on most platforms, you can realise what you want. This whole game changes as soon as you are dealing with high-frequency systems. As soon as your system starts to become latency sensitive. So as soon as actually the technology starts to matter whether you make money or you lose money, then you are somehow in a high-frequency setting, irrespective whether you are talking about one second, or one millisecond, or one microsecond.

So these are typically very specific systems with very specific requirements. Everything in this world that is very specific is often also very expensive. So that is probably not something you will want to start on your own without very detailed research, but indeed if

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you want to venture into high-frequency trading, then the platform matters. There are still lots of offers on the market, but that is really a topic that is a part, and there I can only encourage you to really carry out your very detailed and own research.

How difficult is it to code a new system?

HANS-JÖRG VON METTENHEIM: So coding a system is often a multistep process. So this process may start very easily, by just setting up your system or your system idea in a spreadsheet program. Some people might laugh at the idea of coding up something so sophisticated like an algorithmic trading system in a spreadsheet program, but using a spreadsheet program actually forces you to be very simple and very clear in what you express. So, of course, you can build an incredibly complicated system also in a spreadsheet program, but typically, the spreadsheet program will force you to narrow down your ideas. So even if you already know that the final system might use neural networks, that the final system might use a big-data approach, still having a very basic sketch of the system in a spreadsheet program is very useful.

Then in the next step, really it depends on the complexity of the system. Now the lesson you should keep in mind, if you get the impression that coding up your system becomes difficult, then your system is probably too complex. So at all times, you should be able to get the general logic of the system, without having to look at the code. So what I mean by this, for example, at Acanto, we have different systems running. Some are very simple systems, some are more complex systems, but for all these systems, I am still able to compute the very basic signal in my head just out of data that I get from the usual data sources.

Tell us a bit more about programming languages.

HANS-JÖRG VON METTENHEIM: So there are few usual suspects in the area of programming algorithmic trading systems. If you are just looking at starting out, I would suggest a very good guess with which you will not go wrong is the programming language Python.

So, I don't want to start actually a flame war about programming languages. So there are definitely a lot of other suitable languages you can use. Python has several advantages. First, it is really the language, the programming language of data scientists. So manipulating time series data is really something that Python was developed for, and you will have no problem of building moving averages in Python, if you want to have something simple. You will have no problem in using neural networks in Python, if you want to go towards a bit more complicated system.

So it is a very learner-friendly programming language. There are lots of tutorials online, lots of examples online. So that would be my first take on starting something.

Then, of course, you may face several challenges. One challenge might be you actually want to present your results, because even as a researcher, even as algorithmic trader, you want to publish your results, to your investors, for example. In this case, you might, for example, have a look at the Ruby programming language and the Ruby on Rails framework.

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Marketing plays a very important role, so sometimes a simple system with modest performance might get more investors, because it is presented in a better way than a very complex system that might generally have a very good risk-adjusted performance, but that is presented poorly. So make your results presentable.

But really, if you just want to start out, go with Python. That might be your best choice.

Tell us more about employing programmers.

HANS-JÖRG VON METTENHEIM: When recruiting programmers, when finding people able to code up systems, you are typically faced with a trade-off. So generally, you will not find people with the required experience both in programming and in actually knowing the markets. So you might have very good programmers that have never traded anything or you might have traders who somehow who have learned to program, somehow by the way, but we are not really knowledgeable of programming.

So typically, what you get, except probably if you are extremely well known and you offer a really high salary, is one of these two types. So in doubt, my suggestion would be rather go for somebody who's very good at programming, which means somebody who is very good at framing ideas into an algorithmic structure.

Why should you do that? Because, in my experience, it has been easier to teach people how the markets work, and what kind of specificities you have to consider when dealing with the markets than teaching a trader how to program. The added benefit of taking on board people from outside the trading, outside the financial world, is that they may just also try out stuff, new stuff, that a typical trader wouldn't have thought of. But definitely the most important aspect of every hiring decision should be, will these people you hire be responsible, will they fit well within your team? So that is an often-overlooked aspect, do you somehow work, yes, on the same wavelength? That is very important, and probably even more important than the actual skills.

NIR VULKAN: Having learned more about successful APIs, about programming languages, and about programmers in this video, you should have more well-rounded understanding of the roles of API in modelling algorithmic trading strategies.

Did you understand all the concepts in this video? If you would like to review any of the questions, click on the corresponding button.

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