

# Applied Artificial Intelligence for Quantitative Trading

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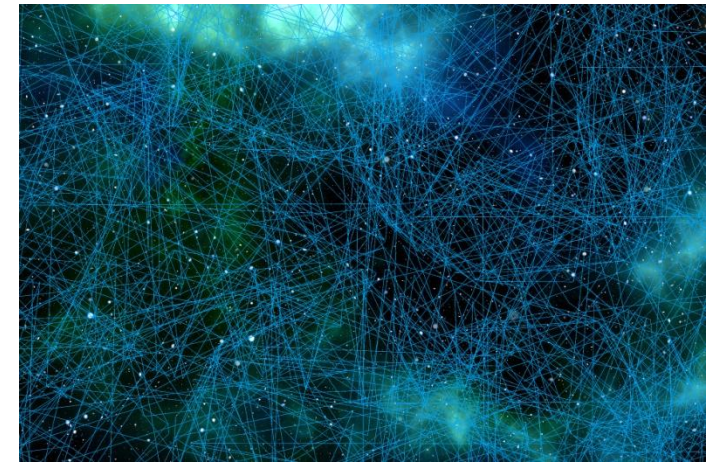
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INVESTMENTS

# AI Applications



# Commercial Benefits

- Makes use of your smart or alternative data
- Copes well with noisy data
- Helps you uncover new relationships
- Model-free approach
- Lets data speak for itself
- Fast Development and Deployment

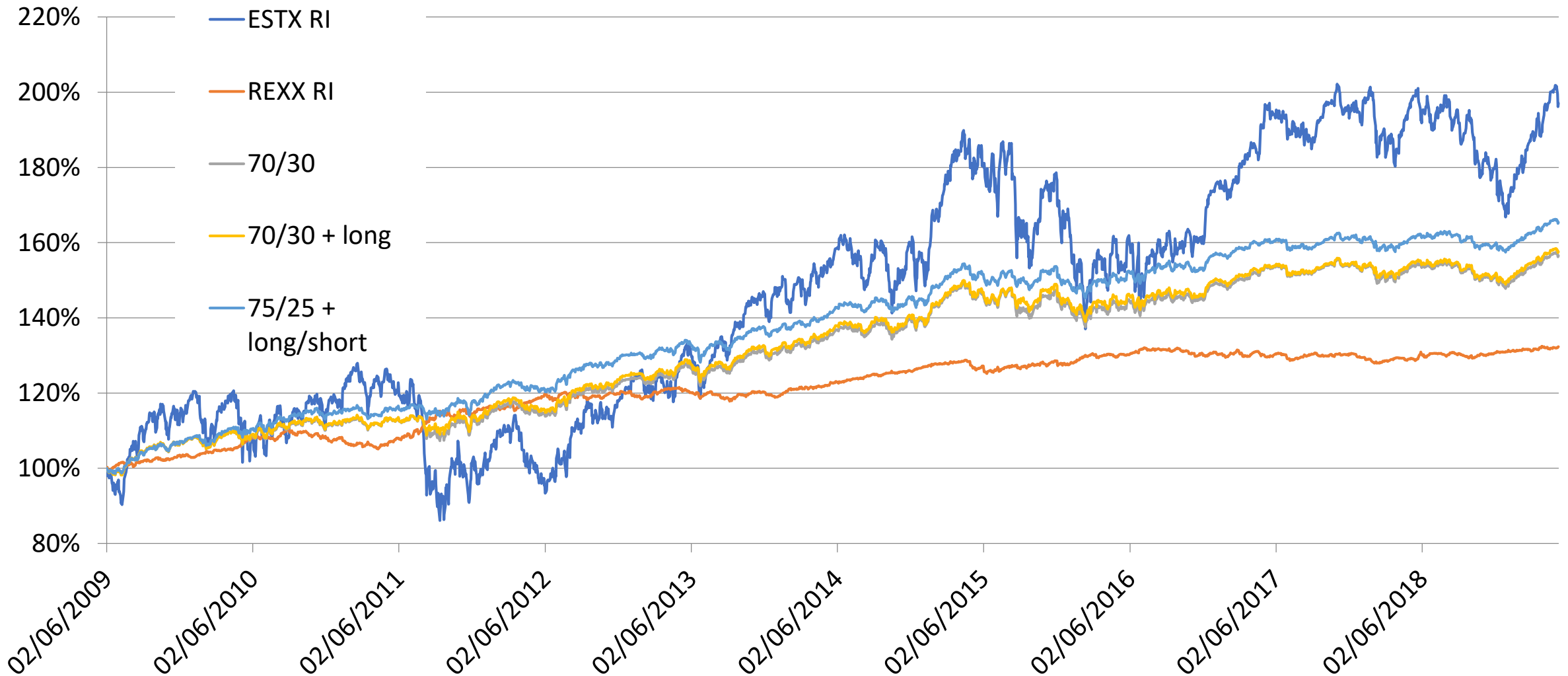


# Example Strategy

- Co-developed with Ron Große, NORD/LB Hanover (Germany)
- Framework: Portfolio 70% Bonds / 30% Eurostoxx
- Constraint: Vary stock allocation between 21% and 30%
- Idea: keep allocation constant and vary allocation through Volatility exposure.
- Use inverse volatility-stock relationship



# Theoretical Results (past returns, etc...)



# Results

- A very slight volatility allocation allows to improve risk-adjusted returns
- Improvement also related to « difficult » periods like december 2018 or « bad » days
- An AI approach gives promising results allowing to identify non-linear relationships → But careful with short volatility allocations.

# Roméo: Pairing Sentiment with AI



- Co-developed for the asset management team of NORD/LB in cooperation with Ron Große
- Different from text mining
- Results come on top of traditional alphas like trend following, quality, small minus big, ...
- Simplicity is key: a risk indicator that will re-allocate a stock-bond portfolio
- Potentially attractive performance with (historically) a non-negligibly reduced occurrence of drawdowns



# Keynum Quant Fund



- Launched in France November 4<sup>th</sup> 2019 as a public mutual fund regulated under the UCITS regime, advised by Keynum Investments, and managed by Sanso Investment Services
- Purely quantitative approach with AI as decision support
- Underlying philosophy: include a diversified array of strategies
- quantIPAG projects gives our best quantitative finance students additional insight into the fund operation and allows them to contribute ideas and strategies through a formalized process → hands-on asset management experience

# Building an AI Team



- Programming a must: Python gold standard of the industry, R useful
- Data scientist as buzzword, but still a good choice
- Engineers and Business School graduates with quant specialization
- PHDs show the ability to concentrate on task for three years
- One hour interview will not reveal AI skills → Give candidates a complex quantitative task to complete at their discretion and at their own pace
- No fear of diversity: physicists, biologists, chemists can all enrich a finance AI team.

# AI Resources



- Exec course for high-level introduction: Oxford Algorithmic Trading Programme (Said Business School):  
<https://getsmarter.sbs.ox.ac.uk/oxford-algorithmic-trading-programme-1f/>
- IPAG-EISTI joint master in Quantitative Finance and Risk Management, also 1 or 2 days introductory workshops
- Excellent technical in-depth coverage by Lopez de Prado: Advances in Financial Machine Learning
- And, yes, academic papers can be a good place to start → But careful with everything that looks too good to be true. It generally is.

# AI Takeover any Time Soon?



- In quantitative trading: No! 😊
- Mostly unfounded fear/wish
- Can provide incremental improvements in very targeted areas
- Human intervention shifts from model building to meta-model building
- However: introducing AI into trading and risk management processes can serve as catalyst for further automation and shift from low-value added, mechanical tasks, towards high-value added, creative tasks.

# Leveraging AI



- No rocket science → Established Processes
- Look for low hanging fruits (for example proprietary datasets)
- Identify quantitative “pain points” where relief is most needed
- Be very clear on what you want your quants to develop
- Decide on breadth (large teams) versus depth (small teams possible)
- Don’t be shy to search for talent out of the usual HR box
- Expectation Management: No Holy Grail. No free lunch. But incremental improvements.
- In God we trust. All others must bring data.

# AI – Give It a Try :-)



**Artificial Intelligence,  
Mathematics & Smart Data**  
are a powerful combination

**AI: Handle with care and enjoy!**  
AI is no Holy Grail.  
But it has the potential  
to improve specific aspects of the  
quantitative trading process.

**Happy to discuss:**  
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