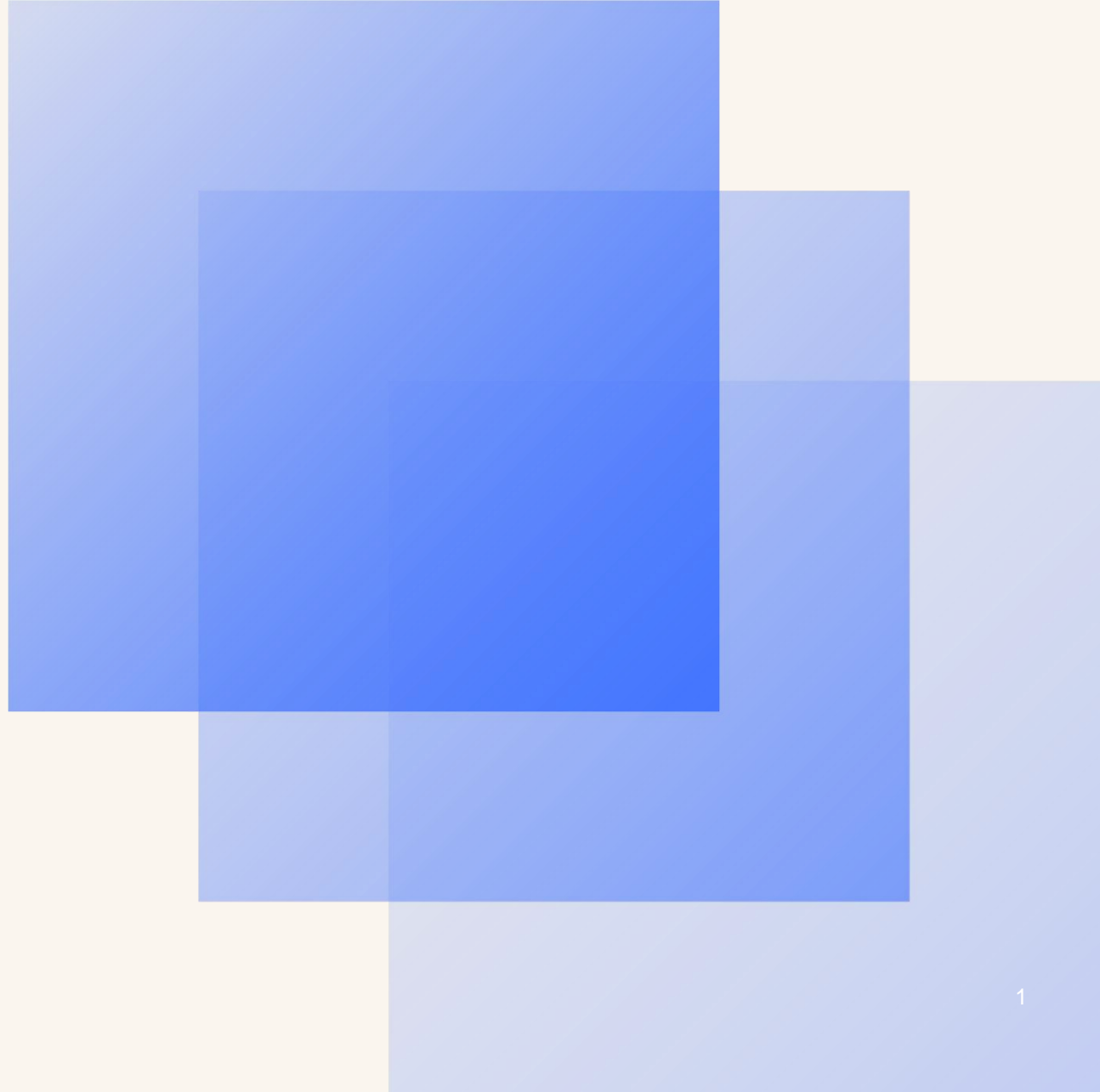


Unleashing the Power of AI: Exploring Data Science for Investment Professionals

**Charles Cheung, PhD, Solutions Architect Manager and
Deputy Director, AI Technology Centre, Nvidia**

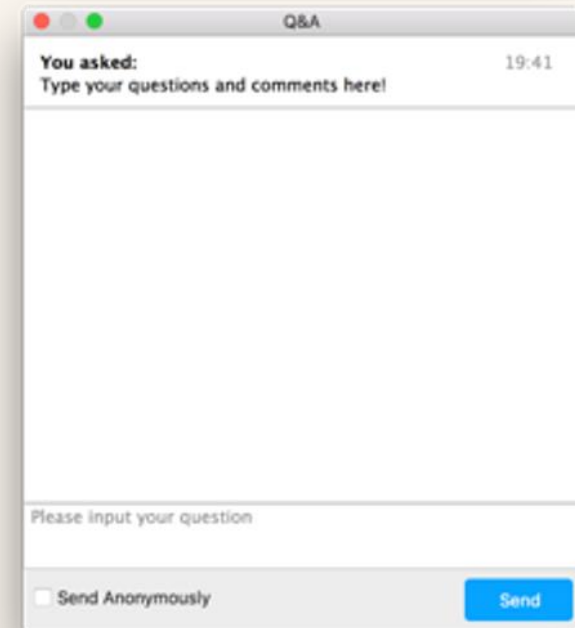
Ginny Wong, PhD, Data Scientist, Nvidia

**Dr. Alan Lok, CFA, Director, Education Content
Development, CFA Institute**



Housekeeping

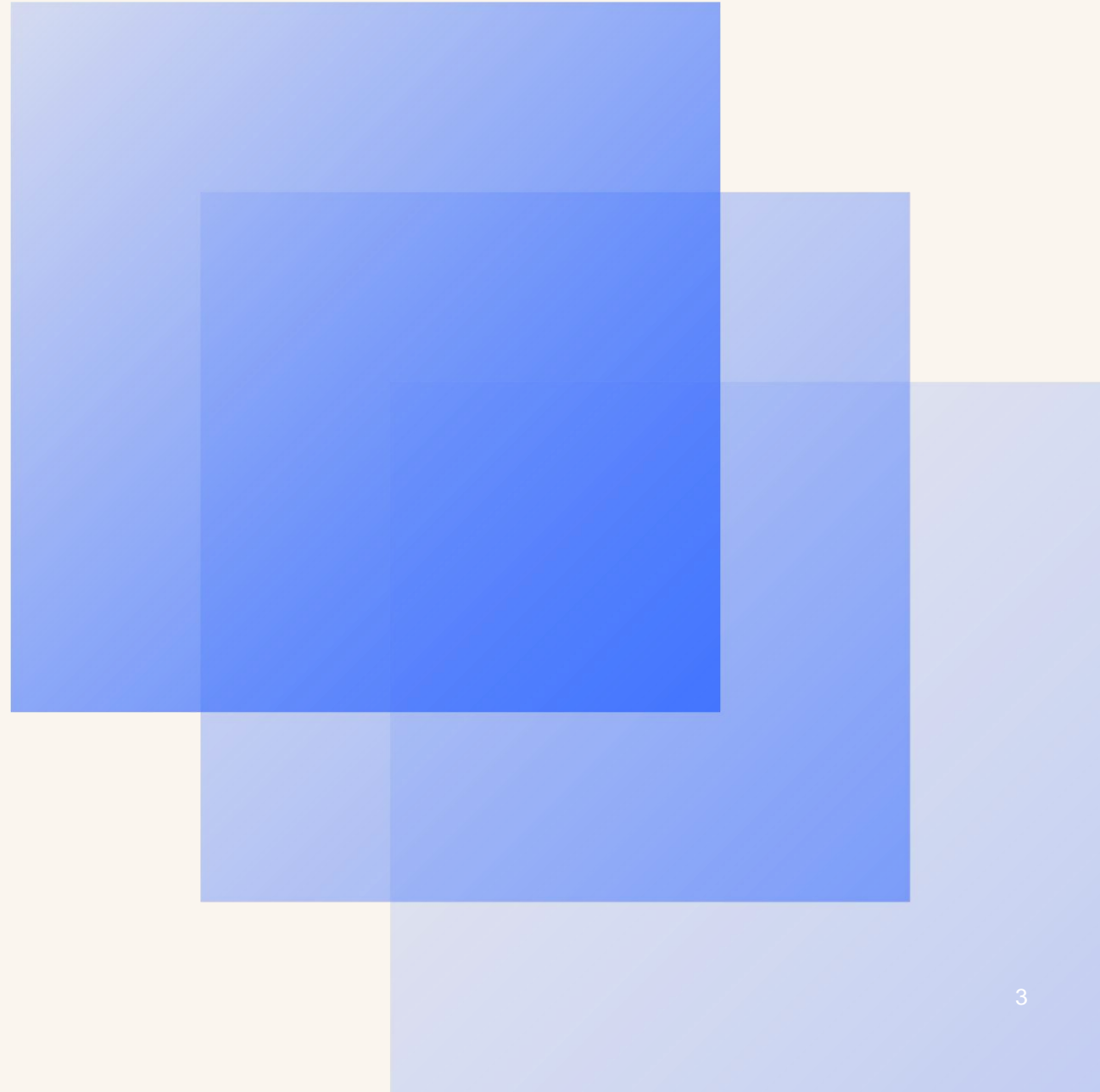
- Today's webinar is scheduled for 60 minutes including Q&A
- All participants are muted throughout the webinar
- We welcome comments via the Chat button and questions via the Q&A button on your screen
- This webinar will be recorded and will be uploaded onto CFA Institute Asia-Pacific Research Exchange (ARX, www.arx.cfa) together with the presentation slides.



The image shows a screenshot of a Q&A window from a webinar. The window has a title bar with the text "Q&A" and a timestamp "19:41" in the top right corner. Below the title bar, there is a header that says "You asked:" followed by the instruction "Type your questions and comments here!". The main area of the window is a large, empty white space for text input. At the bottom of the window, there is a smaller text input field with the placeholder text "Please input your question". Below this field, there is a checkbox labeled "Send Anonymously" and a blue "Send" button.

Data Science for Investment Professionals Certificate

Gain practical knowledge of data techniques and machine learning fundamentals, and how they are used in the investment process. Learn the skills of the future, today.



Data Science for Investment Professionals Certificate

- Designed to provide investment professionals with **practical knowledge** of the fundamentals of machine learning techniques and how they are used in the investment process.
- For those in core investment roles, like **analysts, portfolio managers** and **relationship managers** and those who aspire to be in those roles.
- Learners will be able to explain clearly and “**translate**” **machine learning concepts and their application to real-world investment problems** to a non-expert audience and clients.
- Your team will **understand the language of Data Science** to better serve and anticipate the needs of your clients.

Visit this page to [watch the overview video](#).

Participant Profile

Ideal for current or aspiring investment professionals including but not limited to analysts, portfolio managers, relationship managers, and traders.

Most Common Job Titles That Benefit from this Certificate:



Portfolio Manager



Equity Analyst



Quant Analyst



Investment Strategist



Financial Advisor



Financial Reporting Analyst

Learning Outcomes



Describe and evaluate the statistical methods that underpin machine learning techniques



Select appropriate data visualizations and create simple visualizations using Python



Describe how machine learning applications can address real-world investment problems



Explain machine learning concepts and techniques to a non-expert audience



Interpret natural language processing-based classification models and understand their use in investment decisions



Evaluate machine learning models for biases and understand strategies to mitigate them

Certificate Overview



No experience required, ideal for those with some background in finance and investments



Self-Paced, Online



Final assessment



90 - 100 hours
12 – 15 hours per course



USD 1,399 Members
USD 1,599 Non-members



Portfolio Managers, Analysts
applying data science
techniques, business leaders

Certificate Courses

Course 1

Data and Statistics Foundation

- Measures of Central Tendency
- Measures of Dispersion Introduction to Distributions
- Data Visualization Techniques
- Sampling Theory
- Hypothesis Testing

Course 2

Statistics for Machine Learning

- Data and Patterns
- Randomness and Probability
- Linear Regression
- Introduction to Advanced Regression Concepts
- Introduction to Time Series Analysis

Course 3

Machine Learning

- Machine Learning
- Supervised Learning
- Unsupervised Learning
- Deep Learning
- The Translator

Course 4

Natural Language Processing

- Cleaning and Wrangling Text Data
- Exploratory Data Analysis, Feature Selection and Feature Engineering
- Selecting, Training, Evaluating, and Tuning an NLP Model
- Developing an NLP Model Applications of NLP in Investments

Course 5

Mitigating Biases in the Data Science Pipeline

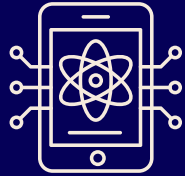
- Investment Context, Some Ethical Dilemmas, Biases and Practical Issues
- Case Studies and Code Labs

Final Assessment

90-minute multiple-choice assessment (online)

Earn the certificate on completion of all courses and the coding labs, and the minimum passing score on the final assessment.

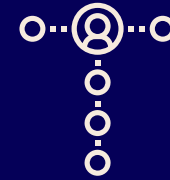
Benefits for Employers



Employees with this certificate can enable the successful integration of data science techniques in their firms and offer **significant ROI**.



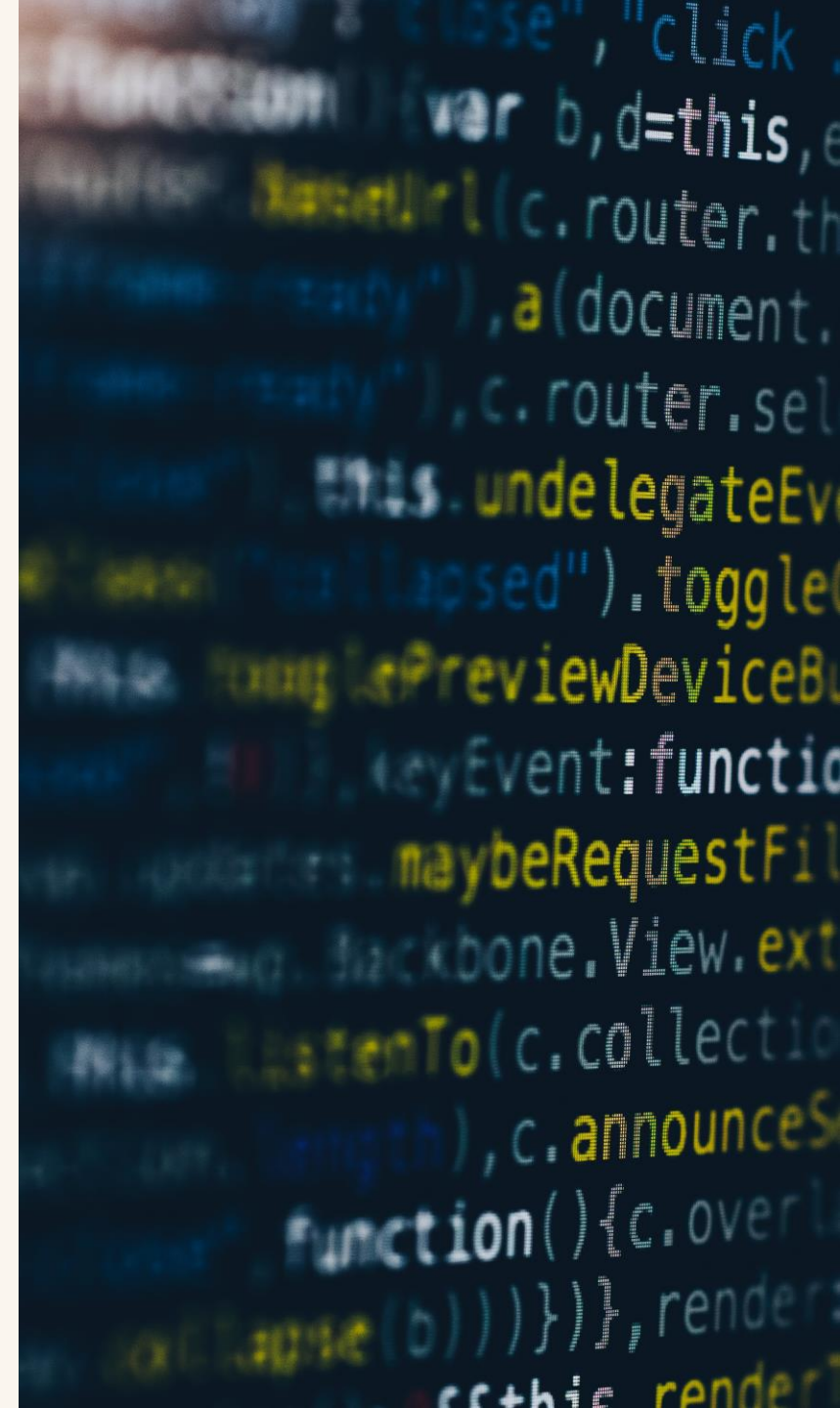
When non-expert employees are able to work with data scientists and “speak the same language”, there is **greater clarity and focus**, which increases productivity and impact.



Employees completing the certificate will enable employers to better **implement T-shaped teams** in their firms.

Practical Application Exercises

- **Learners will use Python to practice calculating** measures of central tendency, calculating measures of dispersion, and creating data visualizations.
- See the application of **Python in linear regressions and advanced regression concepts**.
- Review machine learning solutions to **classification, clustering and factor investing problems**, and can interact with the associated Python code.
- Walk-through the **steps for using Python** to build a natural language processing-based model for classifying sentiment of financial texts.
- See how **Python can be used to identify biases** that arise in different phases of data science pipeline and how to implement strategies to mitigate them.



Data Science for Investment Professionals Certificate

Format: Self-paced online

Length to Complete: 90 - 100 hours

Mode of Exam: Online 60 multiple-choice questions. 70% pass score. 2 attempts at final assessment. 90 mins, 60 multiple choice questions

Participant Profile

For analysts, portfolio managers, and relationship managers seeking practical knowledge of data science and machine learning fundamentals and their applications in investment. Good to have some background in finance and investments. No prior knowledge of Python or R required.

Certificate Overview

Find out how to apply machine learning and data science concepts in real investment problems and articulate them to non-experts and clients. Learn through immersive code labs with real-world scenarios. The certificate comprises five courses with practical exercises and a final assessment.

Enroll now: <https://store.cfainstitute.org/data-science-for-investment-professionals-certificate/>

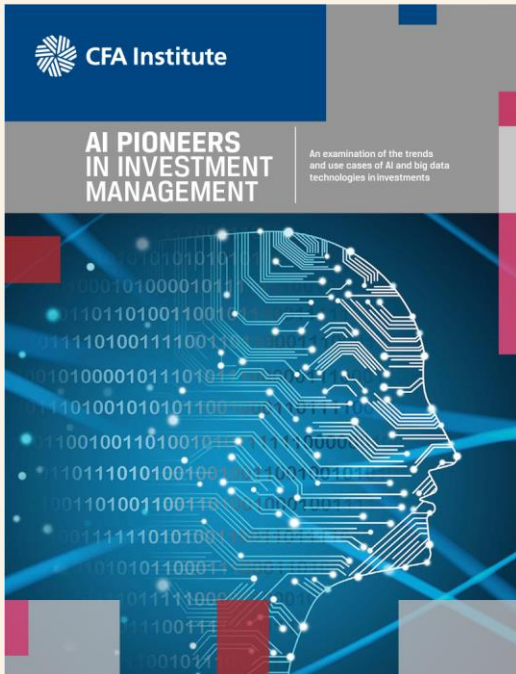
Recognition Format: Certificate and digital badge

Price: USD 1,399 for members. USD 1,599 for non-members

Scan Me

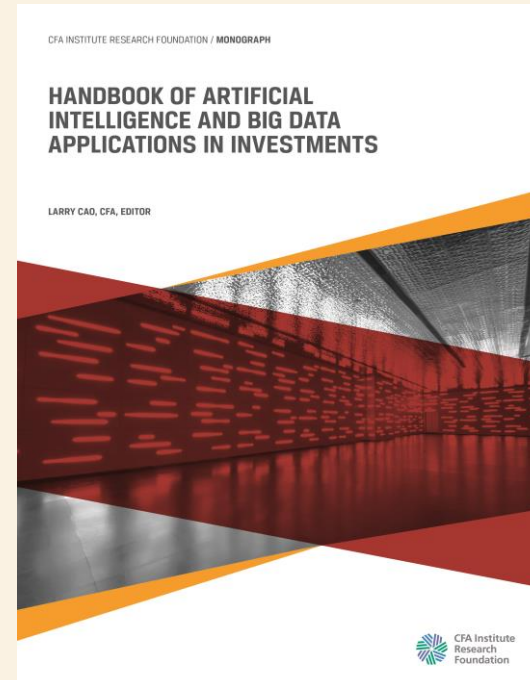


Certificate Based on Extensive Research and Industry Case Studies



[AI Pioneers in Investment Management](#)

Research Report



[Handbook of Artificial Intelligence and Big Data Applications in Investments](#)

Research Report

Special Offer

Bundle two online learning experience for one price:

Data Science for Investment Professionals Certificate and
DeFi: Introduction to Blockchain and Cryptocurrency course

Use code **APACDSDEFI2023** and pay only \$1,599
(for a package valued at \$1,938)!

How to claim this special offer?

- Visit CFA Institute store page
- Add both **Data Science for Investment Professionals Certificate** and **DeFi: Introduction to Blockchain and Cryptocurrency course** to your cart
- Put the code **APACDSDEFI2023** in the Coupon/ Gift Certificate box
- Click Apply



SCAN ME



CFA Institute

AI and Data Science Development Trends in Finance and Investment Industry

Dr. Ginny Wong, Data Scientist, Nvidia



AI and Data Science development trends in Finance and Investment Industry

Dr. Ginny Wong, Data Scientist | NVIDIA AI Technology Center

A New Era of Generative AI for Everyone*

Embrace the generative AI era: Six adoption essentials

Dive in, with a business-driven mindset

1

Take a people-first approach

2

Get your proprietary data ready

3

Invest in a sustainable tech foundation

4

Accelerate ecosystem innovation

5

Level-up your responsible AI

6

This is a pivotal moment... Now's the time for companies to use breakthrough advances in AI to set new performance frontiers—redefining themselves and the industries in which they operate.

FSI Industry Challenges

AI/ML Optimizes Performance in Banking, Insurance, Payments, Capital Markets & Fintech

Investment Banking & Asset Management



Market volatility, rising interest rates, regulatory changes, Environmental Social and Government (ESG) scoring

Next GEN Banking, Big Tech/Retail



Rise of Fintech, Big Tech/ Retail Competition; Consumer expectations for innovative digital experiences, Unknown impact of Web 3.0, DeFi, & the Metaverse

Retail Banking



Open Banking creates data portability across banks; Rich partner ecosystem creates banking as a service platforms enabling any company to become a “bank”

IT Organization



Legacy IT systems, budget constraints, enable work-from-everywhere, cyber security and risk management

Regulatory & Compliance Risk












New regulations, stricter oversight and compliance requirements, data security and privacy, risk management

Consumer Finance



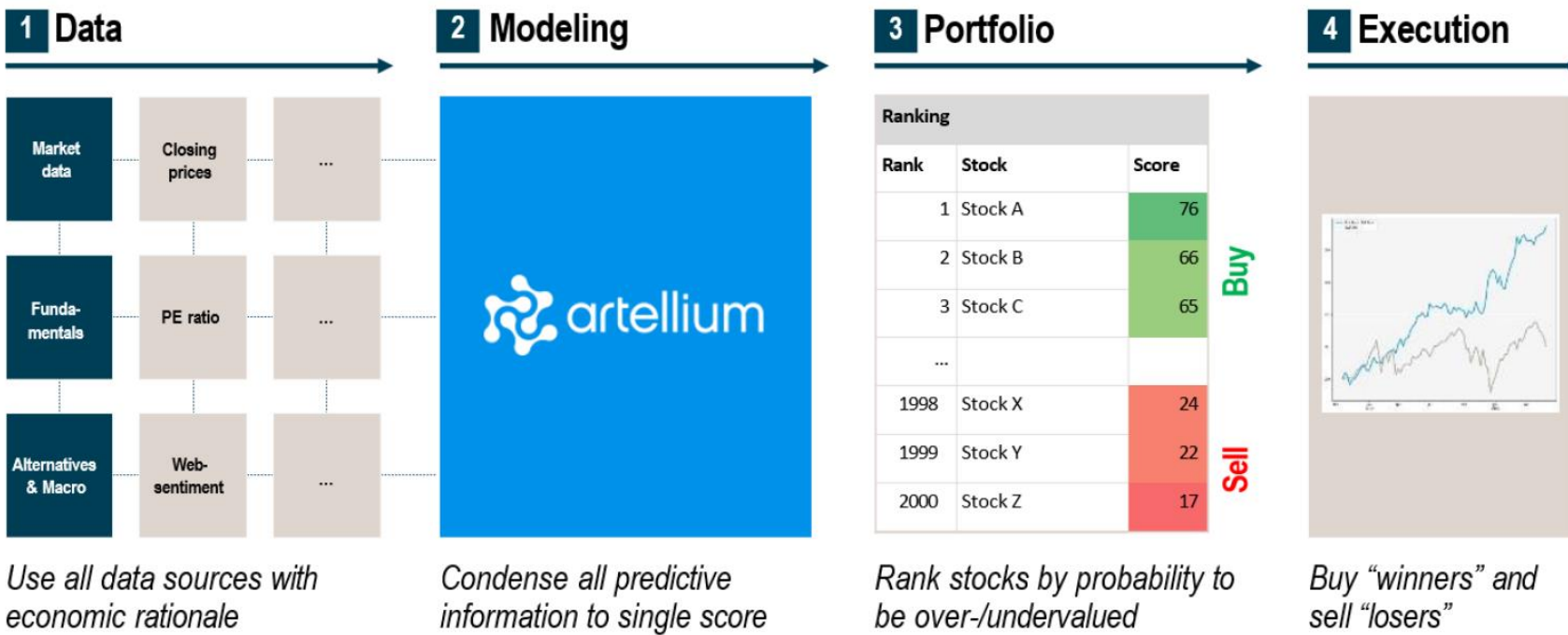
Consumers demand digitally immersive, personalized, intelligent omnichannel experiences across financial services (banking, credit card, investing, insurance, etc.)

AI-driven Solution Areas

Financial Revenue	 Quant Finance Market & Counterparty Risk Algo Trading & Backtesting	 Underwriting & Analytics Market & Counterparty Risk Algo Trading & Backtesting	 Alt Data News & Sentiment NLP Data Satellite & Video Imagery, Synthetic data
Operations	 KYC/AML/Fraud ID Verification, Cyber & Compliance	 Claims Analytics – Default, Exposure Underwriting using Alt Data, XAI	 Intelligent Automation Intelligent Document Extraction, AI RPA Report Generation
Customer Experience	 Conversational AI ConvAI – ASR/TTS	 NLP Chatbot Chatbot/Avatars, BERT Q&A, NLP/NLU/NLG	 Personalization RoboAdvisory, Recommendation



Use Cases



Predicting Returns for Thousands of Securities

Artellium's proprietary technology stack generates return-predictive signals for thousands of securities, multiple times per day. The company's on-premise infrastructure for U.S. and Japanese equity research is powered by multiple NVIDIA DGX Stations and NVIDIA GPUs. Transitioning from CPU to GPU HPC environment significantly accelerated R&D — cutting computation time by more than 80%.





Uncovering New Mortgage Risk and Profit Opportunities

Kinetica's on-demand streaming analytics and statistical models help customers like Citibank analyze multi-dimensional data, do advanced analytics, and accelerate data science on a single GPU platform—reducing days to minutes for critical regulatory reporting queries.

Their GPU-accelerated platform uses NVIDIA RAPIDS to dramatically accelerate model training. The platform pulls multiple data sources (MLS, interest rates, etc.) into a stream where it's automatically joined to historical data, which includes over 40M loans and 2B+ individual payment histories. Running RAPIDS XGBoost, the model runs the inference, and the table listener automatically pulls the results out and delivers the insights. Kinetica enables asset managers to more accurately model, value, and manage mortgage assets at scale, uncover opportunities, gain a competitive edge, and increase profits.

XAI-powered Diversified Portfolio Construction

Munich Re Markets helps the global life and pension industry deliver on its investment management promises — helping their clients increase wealth while preserving capital.

Portfolio diversification is a central topic for long-term investing and savings & retirement products. This is why Munich Re Markets has developed an AI-based analytics and quality assurance tool for diversified portfolio construction.

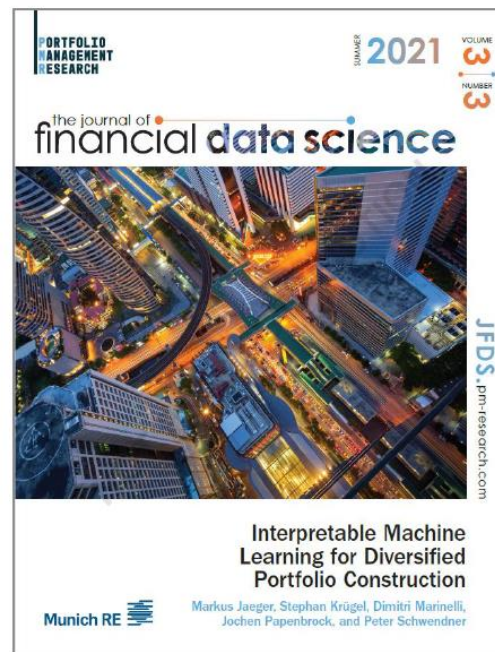
Working with NVIDIA, Munich Re Markets rebuilt their models. This resulted in a timely boost which qualifies to use the approach in the daily investment analysis toolkit of the Munich Re Markets team.

RAPIDS


DGX Station with
4 V100 32GB GPU

 **×50**

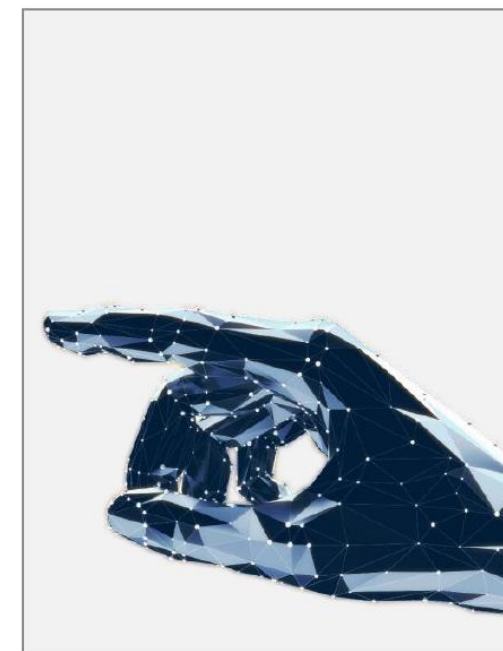
Using GPU acceleration, Munich Re Markets can now provide clients with more robust, faster and smarter asset allocation decisions on demand.



Interpretable Machine Learning for Diversified Portfolio Construction

Research papers published in the JFDS and further insights

[Find out more](#)



FIVE — Investment indices for savings & retirement products

Accessible via reinsurance with Munich Re Markets

[Find out more](#)



Improving Fraud Detection Through Collaborative GPU-powered AI

BNY Mellon, one of the world's largest cross-border payments service providers, processes more than \$1 trillion daily.

Fighting financial crime and delivering faster transactions has pushed BNY Mellon's data science teams to explore innovative ways to improve fraud detection.

The team is training AI models with more extensive and diverse datasets by collaborating with financial partners. BNY built a collaborative fraud detection framework that runs Inpher's secure multi-party computation — which safeguards third party data — on NVIDIA DGX systems.

Trained on over 100M data samples plus an additional 100M samples for Logistic Regression, XGBoost and other techniques, BNY Mellon's GPU-powered ML and AI models outperform rules-based models, improving fraud prediction accuracy by 20% while also preserving the privacy and residency of the input training data.





Personalized Customer Engagement Proves Successful for Financial Institutions

AI looks at patterns of behavior of millions of customers then recommends the best approach to contact them via email, phone call, collection agency, etc.

“The great thing about deep learning as a strategy and a technique is you don't have to have to figure it out all up-front; The data can actually tell you the right thing to do.”

— Neil Bartlett, Scotiabank's SVP Analytics





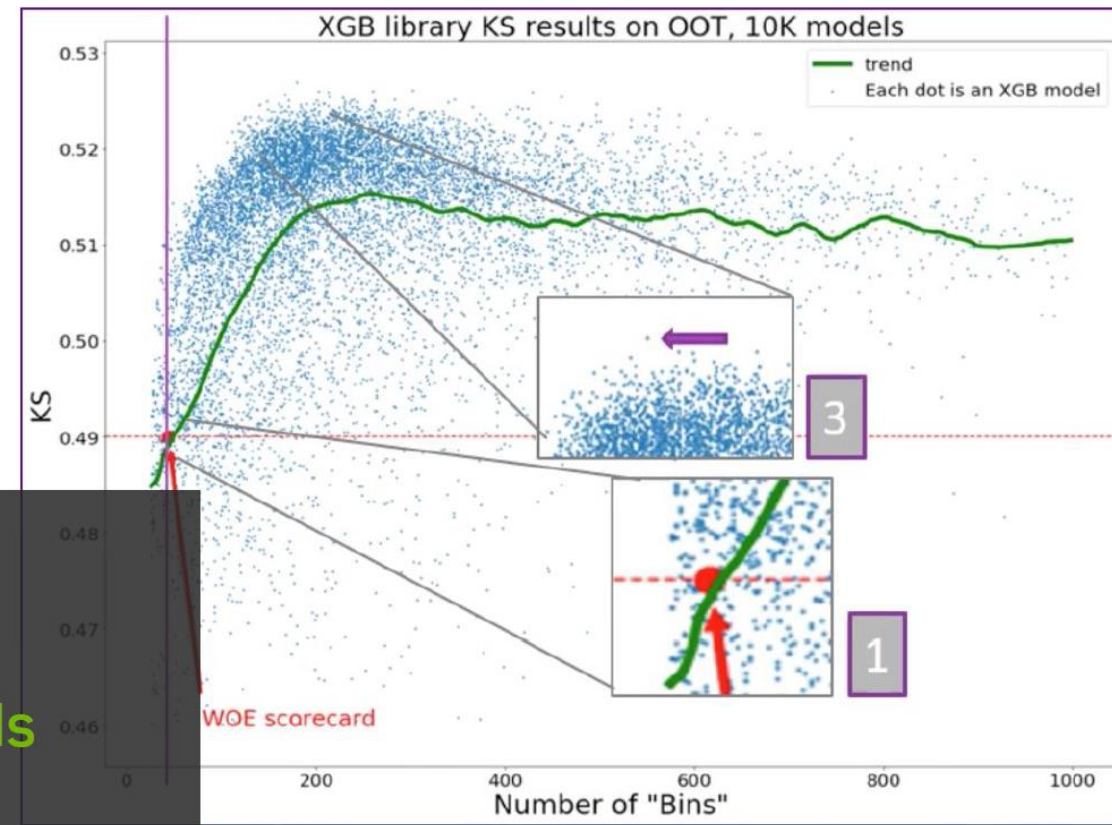
AI, Synthetic Data Reshape Credit Risk Models

Explainability of credit risk models is key for developing underwriting applications.

Scotiabank uses synthetic transaction data to develop advanced AI credit risk models — an approach that also safeguards the data privacy of its customers.

NVIDIA CUDA, RAPIDS on NVIDIA GPUs, GANs and deep learning-based encoder/decoder techniques generate the transaction data, while NVIDIA GPU acceleration and hyperparameter tuning on credit scorecards is used for underwriting.

Using this alternative data approach, the Scotiabank team has increased credit risk prediction accuracy while maintaining model explainability.



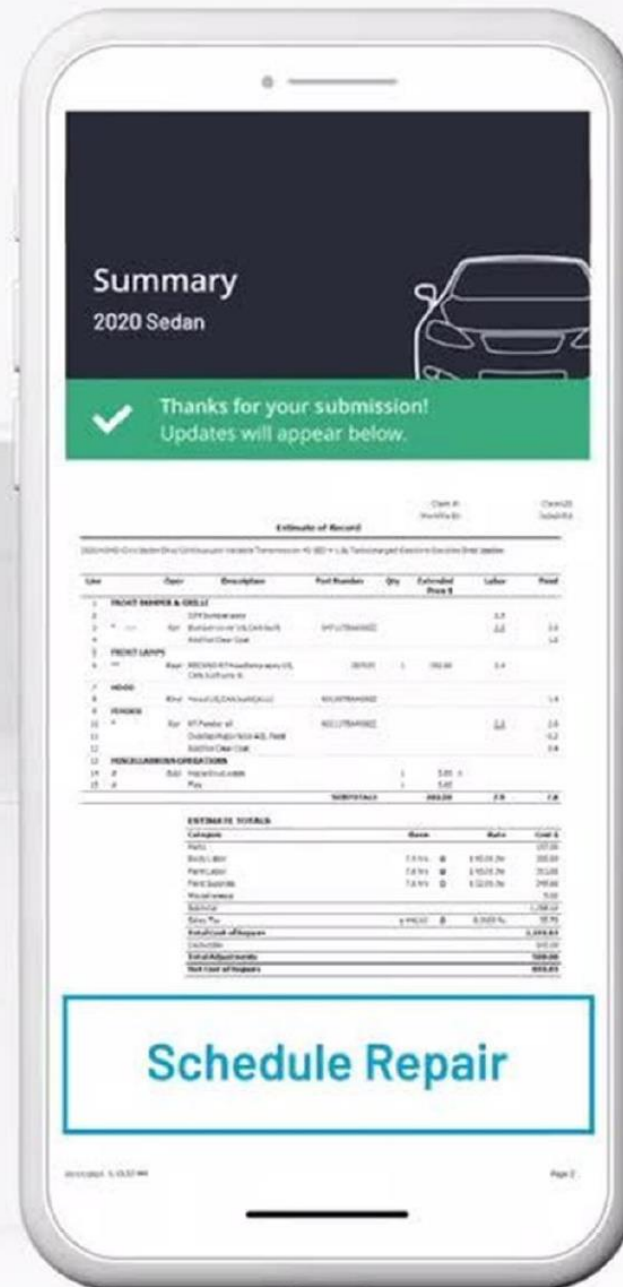


AI Automates Claim Estimations in Seconds, Elevating the Customer Experience

“Using NVIDIA DGX Cloud and Base Command Platform’s dataset management and orchestration capabilities, our data scientists have reported 2X speed up in running experiments.”

— Neda Hantehzadeh, PhD, Director of Data Science, CCCIS

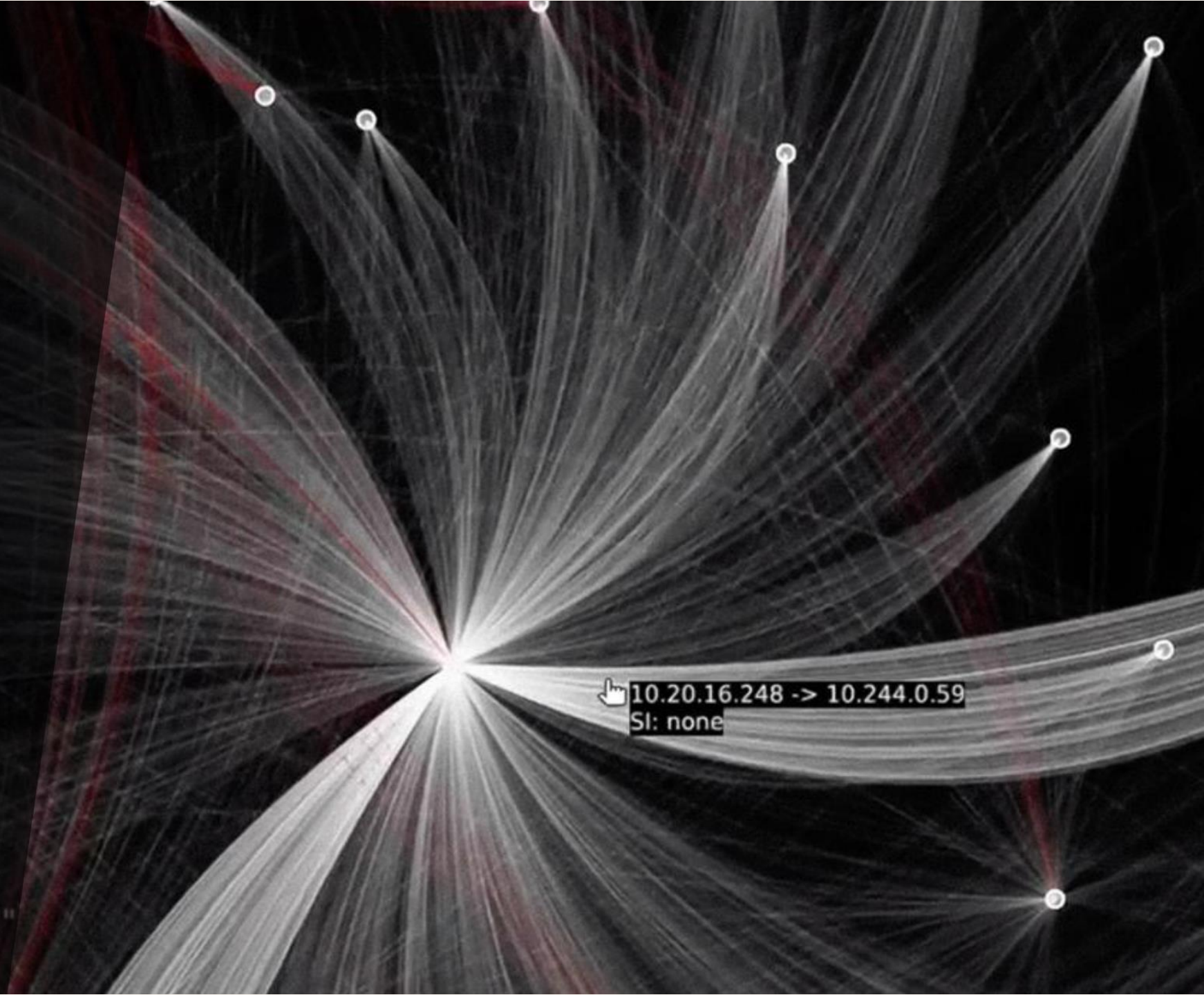
Learn more about how CCC is using NVIDIA DGX Cloud here:
<https://blogs.nvidia.com/blog/2023/03/21/ccc-ai-insurance-claims/>



Cybersecurity Spear Phishing Detection

NVIDIA Morpheus, coupled with generative AI, has revolutionized spear phishing detection. By leveraging synthetic data and pretrained models, developers can identify 90% of targeted spear phishing emails with remarkable accuracy. This powerful combination significantly reduces training times and provides robust solutions for organizations combatting spear phishing attacks.

With the ability to swiftly deploy these solutions, businesses can protect their sensitive information and achieve substantial cost savings. NVIDIA successfully achieving a 96% accuracy in detecting phishing emails, underscores the effectiveness of AI in countering phishing threats.



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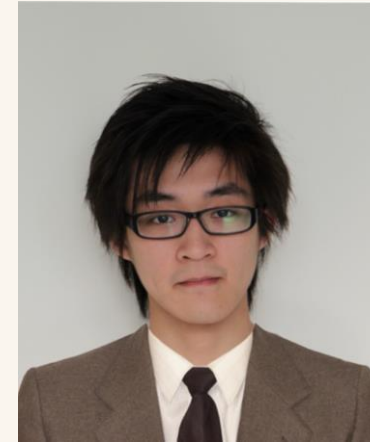
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