Catching FiRE

Ronald Slivka Retires after 26 Years of Distinguished Service to the FRE Department

Letter From the Department Chair:

Nizar Touzi

As we head into summer, I would like to take this opportunity to congratulate all FRE students for their hard work during this academic year. We are very aware that our courses are highly demanding and that the continuing weekly homework-evaluation-projects for various courses took much of your energy. Please remember that it is worth the investment, and your devoted efforts are the best guarantee for the high standards of our program!

Congratulations to all graduating seniors. It has been a great honor and pleasure to work with you. These two years with us passed very quickly and will certainly stay in your memory, and ours as well. We hope that you will forge a fantastic professional career and that you will find enjoyment in the constantly renewing financial industry. Please keep in touch with us. We will always be thrilled to hear about your success and to give you the opportunity to help future cohorts with their experience.

We are looking forward to welcoming the new cohort of MS students, who have already begun the online Boot Camp, in the fall.

In addition, we are excited about the newly hired instructors joining us with new courses, bringing fresh ideas and contributing to keep our program at the highest up-to-date needs within the financial industry. Please join us in welcoming Samim Ghamami, Fabrice Fiol, Paul-Guillaume Fournie, and Ludovic Tangpi.

With our two new full-time faculty joining us this fall, Renyuan Xu and Xin Zhang, we will also inaugurate new PhD courses in machine learning, generative AI, and optimal control and games in view of the most recent financial applications. These challenging courses will be offered primarily for our new PhD students and will be accessible to those MS students wishing to deepen their training in the most advanced quantitative tools.

In one final piece of news, we will be inaugurating our dual-degree program with the Hong Kong Polytechnic University, although we will not have the opportunity to meet the participants this fall, since the first cohort of this program is spending its first year in Hong Kong; they will join us in fall 2025, here in New York.

On behalf of the FRE team, I wish you all success and for now, a great summer break to start the next academic year with a burst of energy.

Sincerely,
Nizar Touzi
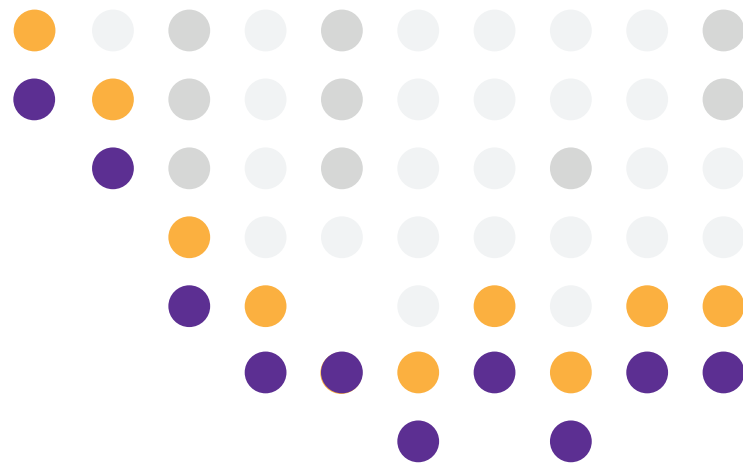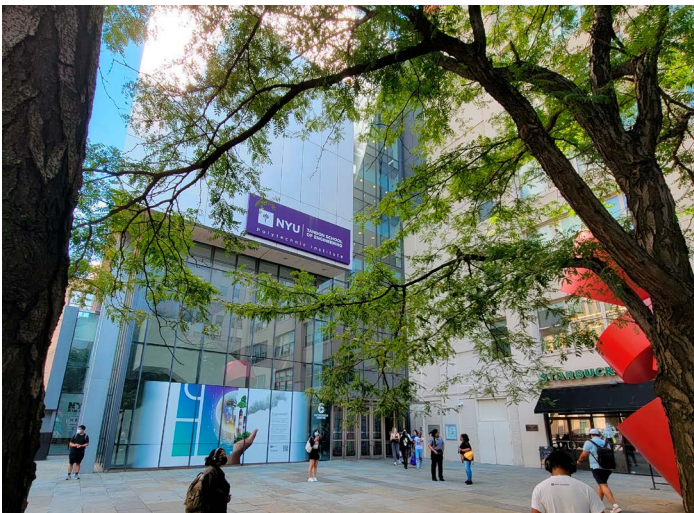
Columbia-NYU Financial Engineering Colloquium brings emerging research to wider audience

The Columbia-NYU Financial Engineering Colloquium, which launched on February 21, 2024, near the start of the spring semester, is a joint initiative between Finance and Risk Engineering (FRE) at Tandon and Industrial Engineering and Operations Research (IEOR) at Columbia, two highly regarded academic departments engaged in applying mathematical models to complex sectors with real-world importance.

While some might suppose that the two New York City-based schools might be bitter rivals, fighting for dominance in their disciplines, nothing could be further from the truth. "We have a long history of collaborative research," FRE Department Chair Nizar Touzi explains, "and we share common scholarly goals."

Each department had organized a popular seminar series, with Tandon's named in honor of the late professor and industry luminary Peter Carr, and when Touzi realized that the two events drew roughly the same audience, he knew that it would be more efficient on a practical level — and more illuminating in terms of the discussions sparked — to organize one larger seminar. "By unifying our teams, this colloquium has the potential to be one of the most visible and influential seminars in New York City," Touzi asserts. "It will highlight our research at the best international standards, encourage research collaboration with industry partners, and attract the brightest, most motivated graduate students to our universities."

The enormously successful kick-off event featured Princeton University Professor of Operations Research and Financial Engineering Mete Soner, whose talk was entitled "Synchronization Games," and Assistant Professor Wenpin Tang of IEOR, who discussed contractive diffusion models and score matching by continuous reinforcement learning.

Organizers hope that the joint colloquium will increase the critical mass of attendees, lead to greater international visibility, and introduce a growing cohort of financial professionals to the most current research and cutting-edge techniques. "Columbia and NYU are addressing some of the world's most challenging industry issues," Touzi says, "and we want as many people as possible to have the benefits of our findings."

Peter Carr Brooklyn Quant Experience (BQE) Seminar Series - Spring 2024

THE LATEST SPEAKERS IN THE BQE SEMINAR SERIES HAILED FROM RIGHT HERE IN BROOKLYN TO HALFWAY AROUND THE GLOBE, AND THE TOPICS DISCUSSED WERE JUST AS WIDE-RANGING.

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FEBRUARY 8	Renyuan Xu (Special Seminar), University of Southern California
FEBRUARY 22	Farid AitSahlia, Warrington College of Business at the University of Florida
FEBRUARY 22	Thomas Philips, NYU Tandon - FRE Department
FEBRUARY 29	Xin Zhang (Special Seminar), University of Vienna
APRIL 25	Fabrice Fiol, Kuvare Asset Management
APRIL 25	Florian Bourgey, Bloomberg
MAY 8	Joshua Reed, NYU Stern School of Business
MAY 8	Jussi Keppo, NUS Business School in Singapore

FRE STILL ON TOP

NYU Tandon's Finance and Risk Engineering Department holds the #2 spot on the list of best Master's of Finance programs in the United States, compiled by the discerning editors of TFE Times. FRE has ranked in TFE top slots for the past four years, and congratulations are in order for the entire FRE team

CAREER NEWS

On November 8, 2023, students gathered in LC400 for the opportunity to hear from five impressive members of our alumni community. Haojie Jing, ChienYueh (Oscar) Shih, Rohan Singh Negi, Pravesh Rijal, and Siyu Ye (from left to right in photo) joined us on-campus for an informative deep-dive panel on how to tackle technical interview processes within various areas of Quantitative Finance. With every seat in the room filled, students took away valuable advice from this motivational and informative session.
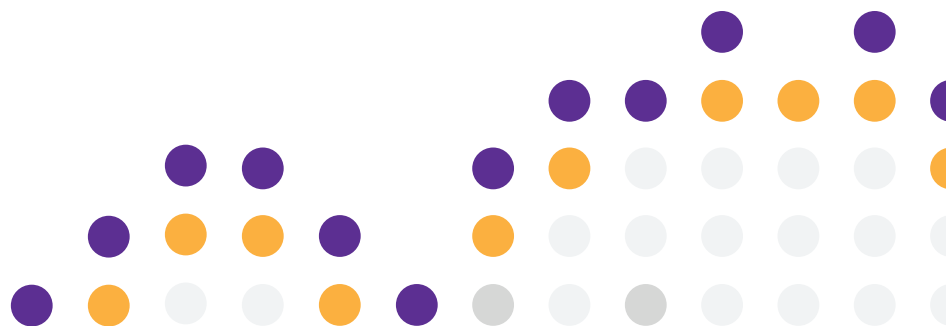
FRE Students Are VIPs

NYU Tandon's Vertically Integrated Projects (VIP) program facilitates long-term, large-scale projects that allow for hands-on application of classroom learning, teamwork-building, and enrichment. This year, two FRE teams, each advised by Prof. Amine Mohamed Aboussalah, participated in real-world initiatives with practical impact.

Team: Anudeep Tubati (Leader), Xinyi Li (Leader), Sihan Wang, Hemaksh Chaturvedi, Divya Agarwal, Avadhoot Kulkarni, Ashwin Guptha, Jiumu Zhu, Penny Yang, Arya Goyal, Utkarshbhanu Andurkar, Bingbing Ke, Chenkai Hu, Yuying Song, Zedong Chen, Pan Hsuan En, Irvin Chadraa, Brendon Jiang, Chenxi Liu, Han Yan, Zoe Zhao, Elaine Chan, Sidhved Warik
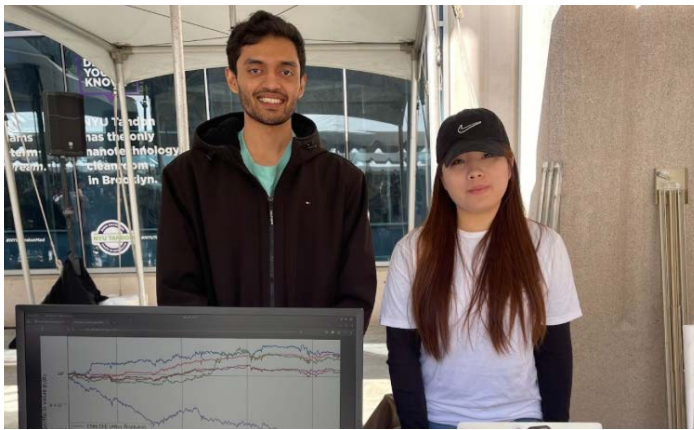

Project: Active Portfolio Management with Machine Learning and Time Series Forecasting

While reinforcement learning is being widely adopted for finance, most reinforcement learning (RL) algorithms make strong assumptions such as the Markov property. Moreover, while small players can formulate portfolio management as a contextual bandit problem, large financial companies cannot do so because of the significant effect of their actions on the markets.

We are surveying the literature for recent advances like multi-agent or continuous-time RL and developing new RL algorithms. We investigate recurrent techniques like Structured State Space for Sequence Modeling (S4) and Transformers to build the state space with a more relaxed Markov assumption. We aim to increase prediction accuracy through methods like Principal Component Analysis (PCA) and Discrete Wavelet Transforms

(DWT) for effective noise reduction and feature extraction. Our work aims to one–compile the state-of-the-art RL methods for finance with a taxonomy and benchmarks on various datasets. Two, develop a recurrent RL (RRL) algorithm for trading and portfolio management. We aim to integrate backtests and benchmarks into a unified API provided by Backtrader.

Team: Nuo Lei (Leader), Niko Liu (Leader), Jugal Pumbhadia, Sujay Anantha, Allen Abraham, Josie Yang, Kehan Chen, Yu Zheng, Reet Nandy, Victor Pou, Haochen Zhang
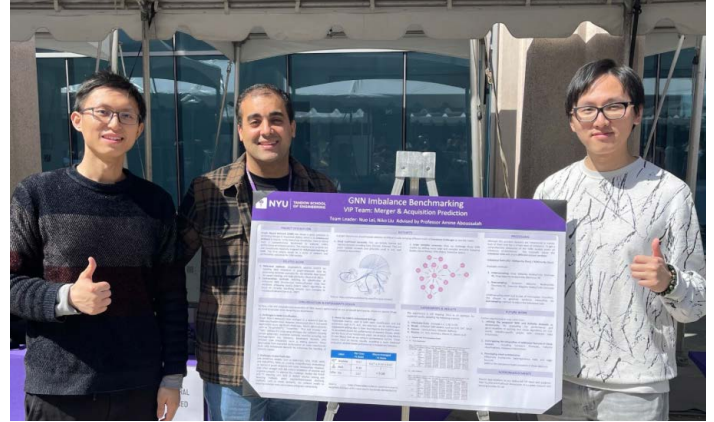
Project: Merger & Acquisition Outcome Prediction

In the field of machine learning, particularly within Graph Neural Networks (GNNs), addressing data imbalance remains a significant yet often overlooked challenge. This oversight is partly due to the common practice of evaluating model performance using balanced class samples, which does not reflect the complexity of real-world scenarios. Our research specifically targets this gap by exploring innovative strategies to mitigate imbalance issues in GNN applications, with a focus on node classification and link prediction tasks. We draw attention to the context of Merger and Acquisition (M&A) outcomes, where the natural sparsity of company linkages exemplifies the acute imbalance prevalent in such datasets. Our approach encompasses the development of novel loss functions and evaluation metrics, as well as the adoption of GraphSMOTE, a technique for generating synthetic imbalanced datasets. By applying these methodologies to prominent GNN models like GraphSage and GraphGCN, our work aims to pioneer effective solutions for handling data imbalance. This initiative not only sheds light on the critical but underrepresented issue of imbalanced data in GNNs but also aims to enhance predictive performance in areas of significant economic impact, such as M&A outcomes.

WE'VE GOT THE (PUBLISHED) PAPERS TO PROVE IT!

Recursive Time Series Data Augmentation

(International Conference on Learning Representations - ICLR)

Amine Mohamed Aboussalah, Minjae Kwon,
Raj G Patel, Cheng Chi, Chi-Guhn Lee

This paper addresses the problem with scarce and noisy data that is common in finance with the development of a time series data augmentation algorithm for machine learning with theoretical guarantees of time series learning improvement.

Abstract: Time series observations can be seen as realizations of an underlying dynamical system governed by rules that we typically do not know. For time series learning tasks we create our model using available data. Training on available realizations, where data is limited, often induces severe over-fitting thereby preventing generalization. To address this issue, we introduce a general recursive framework for time series augmentation, which we call the Recursive Interpolation Method (RIM). New augmented time series are generated using a recursive interpolation function from the original time series for use in training. We perform theoretical analysis to characterize the proposed RIM and to guarantee its performance under certain conditions. We apply RIM to diverse synthetic and real-world time series cases to achieve strong performance over non-augmented data on a variety of learning tasks. Our method is also computationally more efficient and leads to better performance when compared to state of the art time series data augmentation.

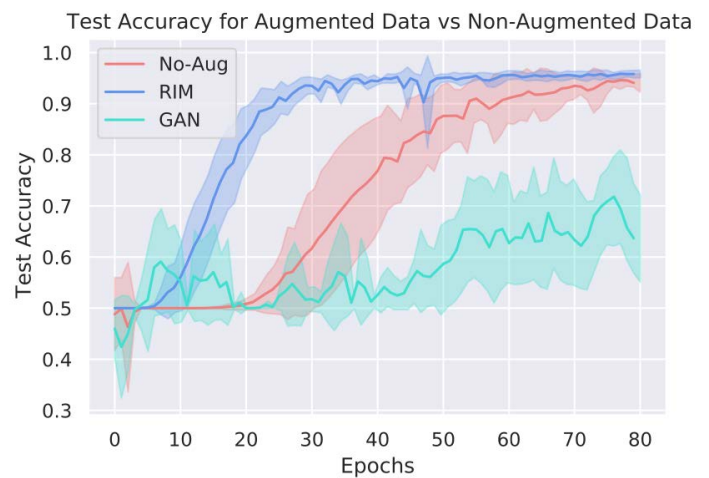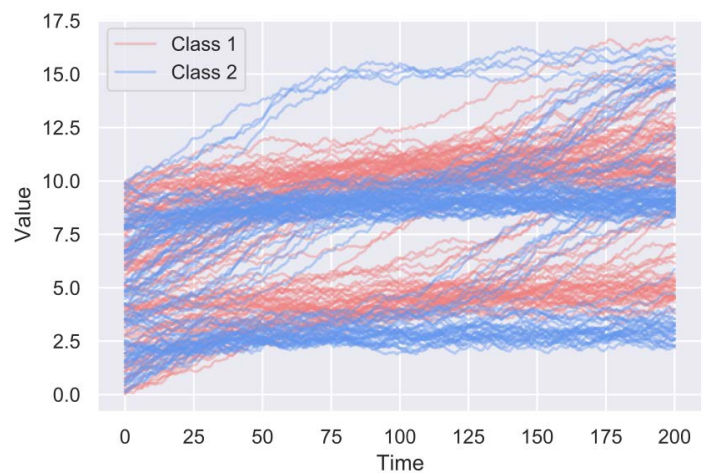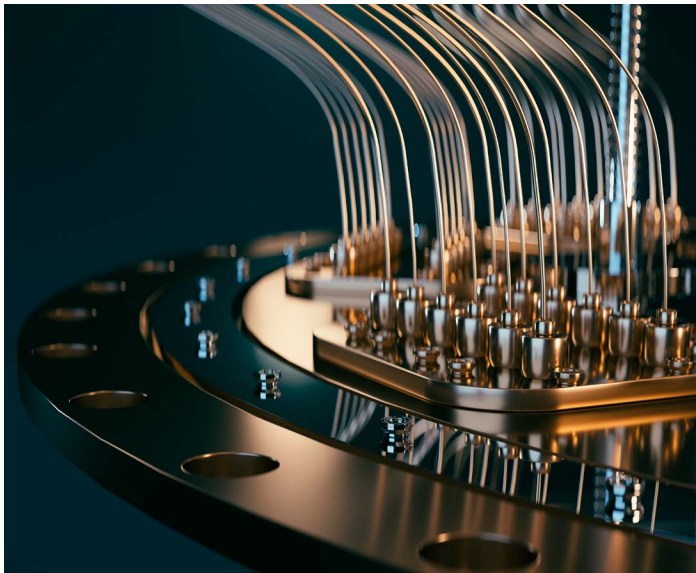https://openreview.net/pdf?id=5lgD4vU-l24s

Figure 3: Time series from two classes and Test Accuracy for the trigonometric synthetic ODE system using a Convolutional Neural Network with kernel size=3, filter=32, batch size=16, using BatchNorm and Adam optimizer. The test accuracy plot indicates the resulting mean ± standard deviation from 10 runs.

Quantum computing reduces systemic risk in financial networks

(Nature Scientific Reports)

Amine Mohamed Aboussalah, Cheng Chi, Chi-Guhn Lee

This paper introduces a new methodology for solving Mixed Integer Linear Programming problems with constraints using quantum computing in the context of systemic risk.

Abstract: In highly connected financial networks, the failure of a single institution can cascade into additional bank failures. This systemic risk can be mitigated by adjusting the loans, holding shares, and other liabilities connecting institutions in a way that prevents cascading of failures. We are approaching the systemic risk problem by attempting to optimize the connections between the institutions. In order to provide a more realistic simulation environment, we have incorporated nonlinear/discontinuous losses in the value of the banks. To address scalability challenges, we have developed a two-stage algorithm where the networks are partitioned into modules of highly interconnected banks and then the modules are individually optimized. We developed new algorithms for classical and quantum partitioning for directed and weighted graphs (first stage) and a new methodology for solving Mixed Integer Linear Programming problems with constraints for the systemic risk context (second stage). We compare classical and quantum algorithms for the partitioning problem. Experimental results demonstrate that our two-stage optimization with quantum partitioning is more resilient to financial shocks, delays the cascade failure phase transition, and reduces the total number of failures at convergence under systemic risks with reduced time complexity.

https://www.nature.com/articles/s41598-023-30710-z

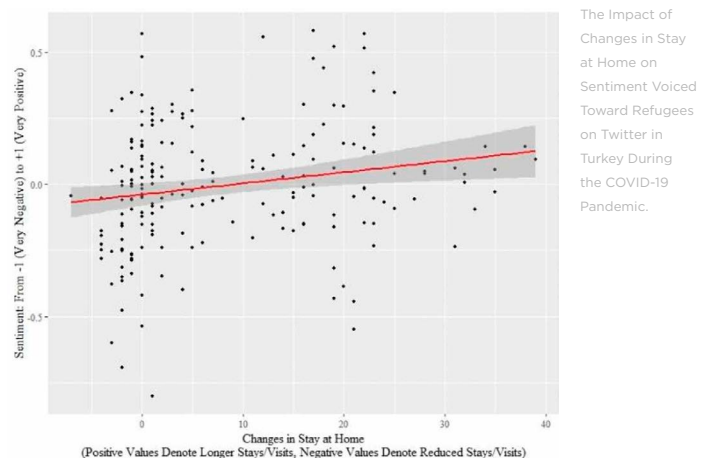# Out of sight, out of mind: The impact of lockdown measures on sentiment towards refugees

(Journal of Information Technology & Politics)

Amine Mohamed Aboussalah, Semuhi Sinanoglu, Amine Aboussalah

This paper studies the risk of government actions like lockdowns impacting public sentiment regarding separate issues such as refugees using machine learning sentiment analysis.

Abstract: How did COVID-19 related movement restrictions impact sentiment toward refugees? Existing theories offer conflicting answers. On the one hand, contact theories suggest that movement restrictions might reduce casual interactions with refugees, leading to less negative sentiments. On the other hand, integrated threat theories suggest refugees may be perceived as a security threat and blamed for these movement restrictions in the first place. To gauge the effect of movement restrictions, we investigate the effect of physical isolation on sentiments toward refugees in Turkey by using a novel dataset. We use Google Mobility Reports' measurements of movement and our measures of sentiments toward refugees using refugee-related tweets from Turkey. Statistical analysis shows that xenophobic sentiment generally decreased during the pandemic. Our study shows that different types of reduced mobility correlate with increased sympathy toward refugees: the more people stay at home, the more positive sentiments toward refugees they exhibit on Twitter. We conclude by proposing two possible causal mechanisms for these findings. The findings suggest that the absence of casual contact with refugees may yield less negative sentiment, and/or that a rally around the flag mechanism yields unprecedented levels of social solidarity in response to the pandemic.

https://www.tandfonline.com/doi/full/10.1080/19331681.2023.2183301

The Impact of Changes in Stay at Home on Sentiment Voiced Toward Refugees on Twitter in Turkey During the COVID-19 Pandemic.

FRE Teams Shine at the Tandon Research Excellence Exhibition

On April 26 the FRE VIP teams (see), supervised by Prof. Amine Mohamed Aboussalah, participated in the Tandon Research Excellence Exhibition. When Dean Jelena Kovačević opened the Exhibition, an annual event highlighting student and faculty research and its world-changing impact, she said: "We launched this Expo in 2013, and the press about that day promised New Yorkers a 'chance to walk into the future.' I think that still holds true today, and over the last 11 years the Expo has become more incredible than ever."

Thanks to Anudeep Tubati and Xinyi Li (Active Portfolio Management using Reinforcement Learning) and Jiangge Liu and Nuo Lei (Application Graph Neural Networks on Imbalanced Datasets), the public got a glimpse of the future of financial engineering!

Four MS Thesis-Track Students Explain Their Work

Student: **Kritaporn Nitjaphanich**

Advisor: **Amine Mohamed Aboussalah**

Thesis: **Coherent Time Series Generative Models Using Dynamic Mode Decomposition**

Our research addresses the significant challenge of mode collapse in generative models for time series data, a problem that is particularly difficult to define and observe due to the temporal complexity of the data. We propose an innovative solution that leverages the principles of Dynamic Mode Decomposition (DMD) and Optimal Transport theory to enhance the fidelity of generated time series, bringing their dynamics closer to that of the original datasets. This approach is poised to advance the development of time-series generative models by focusing on the enhancement of temporal features, an aspect often overlooked in previous research. The anticipated impact of our work extends to improving the quality of synthetic time series data, thereby boosting the performance of downstream tasks such as regression, classification, unsupervised learning, and reinforcement learning. This research holds particular promise for fields like finance and healthcare, where high-quality time series data is crucial yet scarce, offering potential breakthroughs in the way we generate and utilize synthetic data in these critical areas.

Student: **Shweta Pandey**

Advisor: **Amine Mohamed Aboussalah**

Thesis: **A New Perspective on Graph Equivalence: k-Hop Similarity and GNN Invariance**

Our research delves into the complexities of Graph Neural Networks (GNNs) and their inherent limitations in capturing the full spectrum of a graph's structural information due to their path agnostic nature. This potential oversight might hinder the exploitation of a graph's local topological nuances, which are paramount in domains like biology for understanding protein structures and finance for assessing systemic risks. Addressing the challenges posed by the interdependent nature of graph data, including the scarcity of labeled data resulting from expensive human annotation efforts and structural data sparsity, our work introduces the concept of k-hop graph similarity. This novel approach not only tests the hypothesis of GNN invariance but also serves as an innovative strategy in graph data augmentation, aiming to mitigate data scarcity for enhanced performance in node and graph-level tasks. Furthermore, our technique is designed to navigate the hurdles of working with real-world graphs, which are often incomplete and riddled with noise, and to augment the efficacy of GNNs in practical applications such as social network analysis and fraud detection, where labeled data is notably rare.

Student: **Arnav Doifode**

Advisor: **Amine Mohamed Aboussalah**

Thesis: **Geometric Hypergraph Neural Networks for Solving Partial Differential Equations**

Our research aims to advance deep learning methodologies for the high-dimensional approximation of Partial Differential Equation (PDE) solutions, addressing the inherent tradeoff in current numerical methods between the density of grid/mesh points and the accuracy of the results. We are exploring the potential of hypergraph neural networks, which utilize message-passing techniques, to achieve high levels of accuracy with fewer points, thus addressing the efficiency challenges in computational resources and data usage. This investigation is particularly relevant in the era of powerful computing capabilities and abundant data, highlighting the importance of efficiently utilizing large datasets to expedite computation without compromising accuracy. Our work is poised to make significant contributions to the Neural Network based PDE solvers, extending their applicability to critical areas such as finance, weather forecasting, dynamic systems control, and fluid mechanics, where PDEs play a crucial role in modeling dynamic phenomena.

Student: **Anthony Ning**

Advisor: **Amine Mohamed Aboussalah**

Thesis: **Dynamical Modes Coherency Identification for Pairs Trading**

In our research, we address the limitations of the co-integration approach in identifying weakly stationary processes and its lack of robustness in pair selection by introducing a novel methodology that focuses on identifying 'coherent' pairs of time series. Utilizing Dynamic Mode Decomposition (DMD) to measure spatial-temporal coherence, and complementing it with power spectrum coherence in the frequency domain, our approach aims to detect more nuanced relationships between time series. This innovative strategy is expected to not only uncover subtle interconnections between time series data but also to expand trading opportunities within the realm of pairs trading. Furthermore, this research paves the way for a deeper exploration into the intricate relationship between stationarity and coherence in time series, as well as the interplay between spatial-temporal and frequency coherence, opening new avenues for academic inquiry and practical application in financial markets and beyond.

A Quartet of Electrical and Computer Engineering Majors Dive into FRE

Students: **Jash Rathod, Utsav Oza, Raj Ghodasara, Anand Vishwakarma**

Advisor: **Amine Mohamed Aboussalah**

Title: **Non-stationary Transformers for Time Series Forecasting Using Dynamic Mode Decomposition**

Our research seeks to elevate the Non-stationary Transformers framework, introduced at NeurIPS 2022, by enhancing its application in forecasting non-stationary time series data. We propose to augment the original framework's capabilities by incorporating advanced stationarization techniques and novel non-stationary feature integration methods, with a particular emphasis on Dynamic Mode Decomposition (DMD) for its superior feature extraction capabilities. This approach is expected to significantly improve the model's predictive accuracy and adaptability. Furthermore, we aim to merge time series forecasting with signal processing insights, specifically by adapting the Conformer model—a convolution-augmented transformer designed for Automatic Speech Recognition—to better capture the nuances of non-stationary time series. Our rigorous evaluation across diverse non-stationary datasets aims to validate these advancements, with the potential to set new benchmarks in time series forecasting through the integration of DMD-based feature extraction and the innovative Conformer architecture.

Faculty News

Adjunct Professor Roy Freedman Selected for the Technical Committee of the 2024 IEEE CIFEr Conference

Professor Roy Freedman was chosen to be on the Technical Committee of the 2024 IEEE CIFEr Conference. Since 1995, the IEEE Symposium on Computational Intelligence for Financial Engineering and Economics (CIFEr) has been a leading forum for research and applications of Computational Intelligence in Business, Finance and Economics. Understanding these innovations requires multidisciplinary approaches from the perspective of industry, societal and government policies.

The upcoming CIFEr 2024, which will bring together a global community of researchers and practitioners, will be co-hosted by the Center for Research toward Advancing Financial Technologies (CRAFT) and funded by the U.S. National Science Foundation in the New York Metropolitan area.

For more details, visit https://www.stevens.edu/page-right-nav/cifer-conference-2024

Bruno Kamdem Attends the 2023 Global Development Finance Conference in Cape Town, South Africa

Adjunct Professor Bruno Kamdem presented the upcoming co-authored paper "Fortifying BRICS Sustainability Analytics: A Framework for the Delineation of Pervasive and Dynamic South African ESG Investment Factors" at the fall 2023 Global Development Finance Conference in Cape Town, South Africa, held last November. The article discusses the issue of the lack of standardized Environmental, Social, and Governance (ESG) integration in investment strategies, particularly focusing on the Johannesburg Stock Exchange (JSE) in the context of increasing investor interest in sustainability.

His abstract states: "To address this issue, we utilize Exploratory Factor Analysis (EFA) to extract ESG factors from JSE data and integrate U.S.-based ESG indexes to tailor them to the South African market. Additionally, the paper employs machine learning techniques, specifically multi-target radial basis function neural networks (MRBFN), for return prediction and enhances transparency with Explainable Artificial Intelligence (XAI) techniques like SHAP values. The results of the study demonstrate effective ESG index construction, return prediction, and causal relationship analysis. Moreover, the paper extends the theoretical foundation established by Kelly, Malamud, and Pedersen (2023) by applying EFA and machine learning techniques to construct ESG indexes. Furthermore, it practically applies the theoretical analysis of machine learning portfolios provided by Kelly, Malamud, and Zhou (2023) to ESG index development and return prediction in the South African market."

Alec Schmidt's Paper Accepted by the Journal of Energy Markets

Adjunct Professor Alec Schmidt's paper "An Impact of Greenhouse Gas Aversion on Optimal Portfolios" has been accepted by the Journal of Energy Markets. Below is the abstract and a link to learn more about his topic.

The notion of the greenhouse gas (GHG) aversion (GHGA) is introduced into the mean-variance portfolio (MVP) framework. GHGA is assumed to be a weighted sum of the portfolio holdings' GHG emission intensities. A new portfolio performance measure, the GHGA-tilted Sharpe ratio, is offered for GHG-averse investors. While the classical Sharpe ratio may monotonically decrease with growing GHGA, the GHGA-tilted Sharpe ratio has a maximum at intermediate values of GHGA, which defines an optimal GHGA-based MVP. The main holdings of such a portfolio represent promising investment leads for socially responsible investors who do not want to abandon the "brown" industries altogether. An example of a GHGA-based MVP formed with the major constituents of the energy sector is discussed.

Its reprint is still available online at https://lnkd.in/eEB7RpTc

Ronald Slivka Retires after 26 Years of Distinguished Service to the FRE Department

Some things are easy to attach to a definitive number. Ron Slivka began teaching here in 1998, meaning that 2024 marks the 26th year he has spent as an adjunct professor of Finance and Risk Engineering (FRE). Every year for the last eight years, student teams he has coached have had podium finishes in quantitative international trading and investment competitions; if you'd like, you can visit the Department in person and count the many trophies displayed prominently there. You could probably even peruse records from the registrar and determine exactly how many hundreds of students he has taught over the course of his tenure.

Other things, however, are simply incalculable, like the esteem in which Slivka's students and colleagues hold him, the value they place on working with him, and the genuine affection they feel for him.

One longtime colleague, Industry Professor and Deputy Department Chair Barry Blecherman, called it an "honor, privilege, and immense pleasure" to know Slivka and wrote: "Some people are deep thinkers. Some people are great teachers. Some people are kind and generous. He is the rare person who has all of these qualities."

Now, after more than a quarter-century at NYU Tandon, Slivka is preparing to step down from his post. Just don't call it retirement, though. "I prefer to think of it as writing a new chapter in my life," he explains.

Listening to what Slivka – who was one of the financial industry's earliest quantitative analysts – has planned, it's clear that this next chapter will be an action-packed one. His plans include gardening and landscaping at the life care community where he and his wife now reside; serving as the newly elected vice-president of the community's executive board (a position ideally suited to someone with his finance background); undertaking a wide range of travel with his wife, including visits to family in Great Britain and nature trips around the globe; and stepping up his exercise regime (he recently won a triathlon).

While he's looking forward to all of that, Slivka admits that the decision to leave FRE was not an easy one to make. "Teaching has been a vital part of my life for a long time," he says, "and I'm going to miss my colleagues and students at NYU Tandon more than I can say."

Ask him about the greatest rewards and fondest memories of the last 26 years, and he has to give it some thought – there are just so many of them. Forced to choose though, Slivka says that each of those competition trophies represents a high point in his career, concrete proof that he has helped to educate a new generation of quantitative professionals ready to make a material contribution to their industry.

That's not to say there were no challenges: "Quantitative financial industry technology is constantly evolving, and it can sometimes be difficult, as teachers, to remain current," he admits. "But if you love what you're doing, you'll find the time. Any advice I might offer to my successors boils down to this: Make sure you love what you're doing, and all else will follow."

Retired Distinguished Professor Nassim Nicholas Taleb Met with Four Heads of State in 2023

During his book discussion tour in 2023, retired Distinguished Professor Nassim Nicholas Taleb met with four heads of state, from India, Czech Republic, Poland, and Armenia.

Prime Minister Narendra Modi, of India, complimented Taleb on his success in bringing the complex ideas of risk and fragility into popular conversation. Modi shared on the social media platform X (formerly Twitter), "Professor Taleb has interesting perspectives on many issues and I had the opportunity to hear them on some of those subjects. He was greatly interested in India's development strides. I emphasized on how we are nurturing a spirit of enterprise and risk taking among our youth." Taleb and Armenian president Vahagn Khachaturyan exchanged

Left to Right: Ziqi Yuan, Yu Gu, Xiaochang Cheng, Julien Guyon (in the cap), Josie Yang, Tianxin Zhang, Aditya Daftari, Xin Huang, Yangyi Zheng, Ao Shen and Zhanghao (Steven) Li

Julien Guyon Reflects on His Spring 2024 Volatility Modeling Course

"It is a great pleasure for me to teach Volatility Modeling at NYU Tandon. Volatility is the most crucial factor for pricing and hedging financial derivatives, and for quantifying and managing financial risks. It is therefore very important for students to be familiar with the different notions of volatility and the different volatility derivatives, and to accurately model the volatility of financial markets to (1) correctly evaluate and hedge derivative products, (2) generate realistic future scenarios in order to quantify and manage risks, and (3) predict future volatility. The Volatility Models course covers the most important volatility models, from Black-Scholes to local volatility to stochastic volatility to local stochastic volatility, the reasons why they were introduced, their properties, their advantages and drawbacks, and how to calibrate them to market data. The students get familiar with the most popular volatility models via written homeworks and computing assignments. In professional life, this module will allow students to correctly choose a volatility model depending on the problem/product at hand and how to calibrate it to market data."

FRE's Congratulations Corner

FRE Director of Career and Industry Relations, Sara DeLusant, and her husband, Steve, welcomed their second child, Nico Eugene, on March 11th. Nico weighed in at 8 lb., 15 oz. and his parents and big sister, Mila, are absolutely head over heels in love with him. They are soaking up this special time with Nico at home and enjoying plenty of newborn cuddles.

Decades of Dedication

The Tandon HR Service Awards ceremony was held on May 1, and Professor Barry Blecherman and Jennifer Novicki, our communications manager, were among the honorees.

Barry joined what was then known as Polytechnic University in 1994. Over the past 30 years he has served as director of four different degree programs,has been the school's undergraduate dean of academics, and has delivered many different courses. He is very happy to be FRE's deputy chair, MS FE program director, and director of the minor in finance.

Jen began her career at NYU in the Digital Communications Group as a Web Content Producer in 2014 before joining the Finance and Risk Engineering Department in 2019.

Join us in congratulating them for their contributions to the FRE Department and the NYU community.

2024 Tandon Commencement and Achievement Award Ceremony

NYU Tandon hosted their annual Commencement and Achievement Award Ceremony on May 7, and FRE recognized the following recipients with the Outstanding Academic Achievement Awards and the Superior Leadership and Service Awards.

From Left to Right: Wang, Liu, Chen, Sharma, Nizar Touzi, Department Chair, He, Daftari and Sun

Outstanding Academic Achievement Awards

- Aditya Daftari
- Zheqi Chen
- Jifan He
- Layla Li
- Shiyi Liu
- Raghav Sharma
- Haiting Sun
- Yusen Wang
- Yiqi Yue

From Left to Right: Tomaschy, Biswas, Nizar Touzi, Department Chair, and Daftari
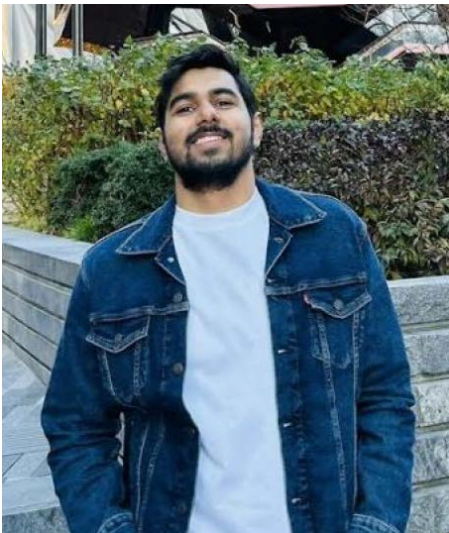
Superior Leadership and Service Awards

- Nathan Tormaschy
- Debapriya Biswas
- Aditya Daftari

Congratulations to the honorees, and we wish all graduating seniors the best of luck in their future endeavors.

FRE Student Workers

Aaryav Sharma
1st Year Student

Favorite Class: Financial Computing

Fun Fact: I'm an F1 tech enthusiast and a history buff.

Bingbing Ke
1st Year Student

Favorite Class: Financial Computing

Fun Fact: My hobbies are watching movies, eating,and traveling.

Cameron Walcott
1st Year Student

Favorite Class: Valuation for Financial Engineering

Fun Fact: Despite not playing in the NBA I have played basketball on an NBA court twice, and I have lived in 6 cities in the US.

Dhruvi Sarvaiya
1st Year Student

Favorite Class: Financial Risk Management
Fun Fact: I have an irresistible urge to pet any dog I see.

Fatma Soliman
1st Year Student

Favorite Class: Financial Risk Management
Fun Fact: I've been to around 7 countries and speak 4 languages.

Yinyin Tong
2nd Year Student

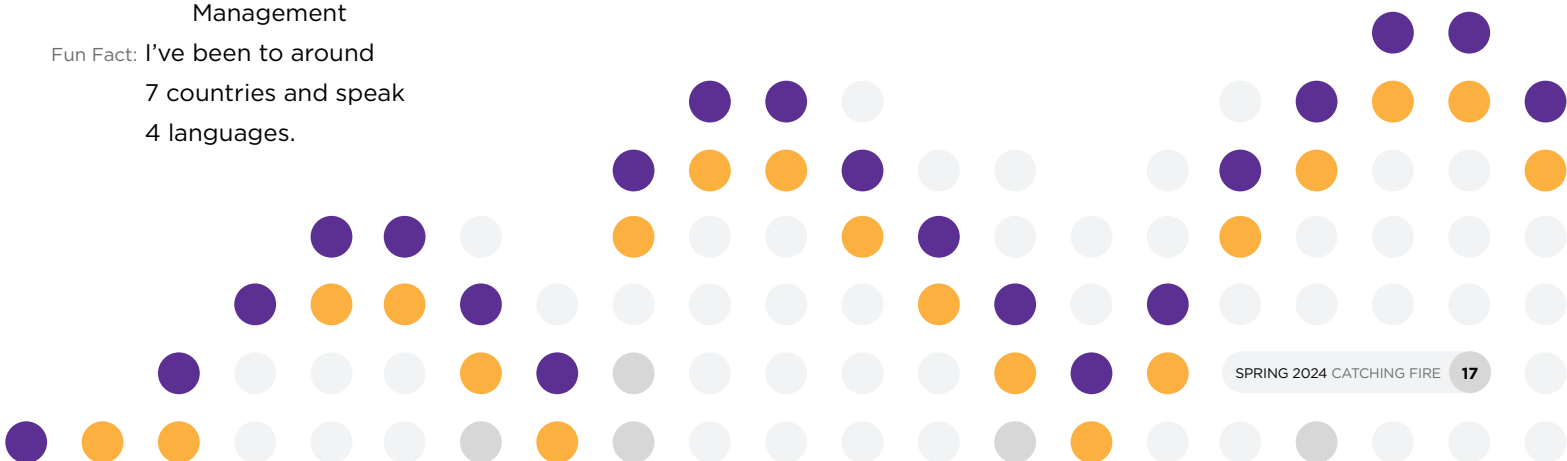Favorite Class: Machine Learning
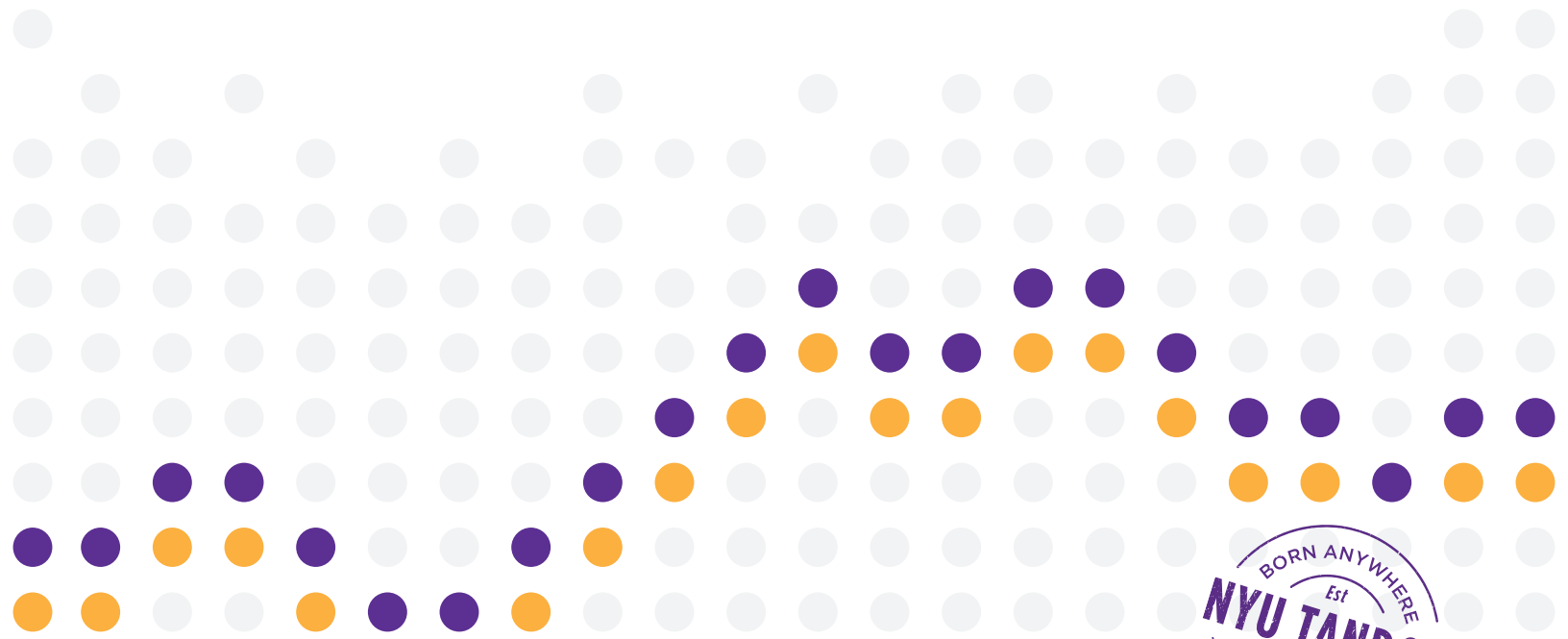Fun Fact: I sweat from the ceiling.

Apoorv Saxena
1st Year Student

Favorite Class: Quantitative Methods
Fun Fact: I play a lot of video games.

Comments or Questions?

engineering.fre@nyu.edu
or 646-997-3279

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ABOUT Catching FiRE

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Design: NYU Tandon Marketing and Communications Office

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MADE IN BROOKLYN