COLUMBIA ENGINEERING

The Center for Digital Finance and Technologies

Center for Digital Finance and Technologies

Impact Report

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Columbia University
Fu Foundation School of Engineering and Applied Science

Letter from the Director

The Center for Digital Finance and Technologies (CDFT) was founded to address a defining challenge of modern financial systems: digital infrastructure, cryptographic protocols, and artificial intelligence (AI) are rapidly reshaping markets, yet the intellectual foundations governing these transformations remain fragmented across disciplines.
Since its launch in November 2022, CDFT has pursued a clear mission: to build rigorous, interdisciplinary research, outreach, and education in digital finance that integrates economic theory, financial engineering, computer science, and public policy.

The Center's approach emphasizes not only academic excellence, but also translation—transforming research into software, policy insights, and educational initiatives with real-world impact.

Over the past three years, CDFT has grown into a global convening platform for scholars, practitioners, and policymakers working at the frontier of decentralized finance, digital payments, market design, and agentic AI. The Center has produced high-impact research published in leading journals, contributed to central-bank policy discussions, developed open-source software used by researchers and practitioners, and trained a new generation of scholars now placed at top academic institutions.

Looking ahead, CDFT aims to deepen its role as a trusted intellectual partner to industry leaders, regulators, and philanthropic organizations seeking principled guidance on the future of financial systems. This report documents the Center's activities, impact, and strategic vision during its formative period. For more details on Center activities, see `https://godigital.engineering.columbia.edu/`.

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Executive Summary

What is Digital Finance?

Digital Finance is the study and engineering of programmable financial systems. It examines how AI-driven decision processes, distributed ledger infrastructures, and tokenization reshape trading, payments, credit intermediation, and risk management. The field integrates financial economics, market design, data science, and systems engineering to build more efficient, transparent, and resilient financial markets, while addressing emerging challenges in regulation, governance, and systemic stability.

The Center for Digital Finance and Technologies (CDFT) is an interdisciplinary research center within the School of Engineering and Applied Science at Columbia University dedicated to advancing the theory, design, and governance of digital financial systems. Operating at the intersection of operations engineering, computer science, economics, finance, law, cryptography, and artificial intelligence, the Center addresses foundational challenges posed by decentralized markets, digital payment systems, and algorithmic decision-making.

Between November 2022 and December 2025, CDFT has established itself as a leading academic hub for cryptoeconomics, digital finance, and artificial intelligence in finance. Its impact spans five core dimensions:

- **Research excellence**: Keynote presentations, thought leadership pieces, and peer-reviewed publications in top conferences and journals, reshaping understanding of financial markets and technology's role.
- **Policy engagement**: Direct collaboration with government institutions including the Federal Reserve Bank of New York and the Federal Reserve Board of Governors on digital finance, artificial intelligence, and systemic risk.
- **Open-source innovation**: Software tools addressing blockchain security, market design, and high-dimensional financial modeling.
- **Talent development**: Placement of doctoral students and postdoctoral affiliates at leading academic institutions.

- **Global convening**: Major conferences and summer schools bringing together academia, industry, and policymakers.

CDFT's future agenda focuses on constructing data hubs for digital assets, developing accelerator programs for research translation, and establishing a new strategic focus area dedicated to AI and its intersection with Web3. The overarching objective is the responsible integration of AI, technology, and automation into global financial system infrastructure.

1. Mission and Strategic Positioning

1.1 The Challenge of Digital Financial Infrastructure

Decentralized finance protocols process billions of dollars in daily volume, yet their stability and market design properties remain poorly understood. Central banks worldwide are exploring digital currencies without strong consensus on optimal design principles. AI agents increasingly participate in markets, raising fundamental questions about price discovery, information aggregation, and systemic stability that existing theory cannot fully address.

The velocity of technological change has outpaced the development of rigorous analytical frameworks, creating material risks. Without principled frameworks, financial innovation proceeds through trial and error, with potential consequences for market stability, consumer protection, and economic efficiency. Regulatory approaches remain reactive rather than anticipatory, often imposing frameworks designed for traditional intermediaries onto fundamentally different technological architectures.

1.2 Founding Mission and Objectives

CDFT was officially launched in November 2022 to address these challenges through a unified research agenda grounded in economic theory and computational rigor. The Center brings together faculty and researchers from Computer Science, Industrial Engineering and Operations Research, the Columbia Business School, Law School, and Economics Department. The Center's mission encompasses three interconnected objectives:

Knowledge creation: Developing rigorous theoretical frameworks and empirical methods for understanding digital financial systems, including formal models of decentralized protocols, quantitative analysis of market microstructure in automated trading venues, computational approaches to systemic risk measurement, and design of AI systems for risk management in finance.

Translation and impact: Transforming research insights into practical applications through open-source software, policy recommendations, and educational initiatives, whether through tools used by practitioners, frameworks adopted by regulators, or concepts integrated into industry standards.

Training and Development: Training a new generation of scholars equipped to work at the intersection of finance, technology, and policy, including PhD students, postdoctoral researchers, and visiting scholars who will populate academic institutions, central banks, regulatory agencies,

and technology firms worldwide.

1.3 Core Principles

Three core principles distinguish CDFT's approach from both traditional financial engineering and economics research and purely technical blockchain development:

1.3.1 Interdisciplinary Approach

Digital financial systems cannot be understood through any single disciplinary lens. Economic models of decentralized markets must incorporate computational constraints. Cryptographic protocol design requires economic reasoning about incentives. Machine learning applications to trading demand understanding of market microstructure.

Integration occurs at multiple levels: joint research projects combine game-theoretic analysis with cryptographic verification or integrate optimal control theory with machine learning for dynamic portfolio management. PhD students attend seminars organized by CDFT, and spanning economic theory, algorithm design, and empirical methods. Research proposals undergo review by panels representing multiple disciplines.

The most important questions lie at disciplinary boundaries: How do AI agents affect price discovery? What makes stablecoins stable? How should decentralized governance be designed? Each requires synthesis of economics, computer science, cryptography, and finance.

1.3.2 Public Relevance and Academic Independence

CDFT engages actively with policymakers and industry while preserving academic independence. Center faculty provide technical briefings to regulatory agencies, inform policy white papers distributed to central banks, and participate in international standard-setting processes.

Industry partnerships provide financial support, data access, and practical perspectives. In return, sponsors receive research insights, access to talent, and opportunities to shape the research agenda. However, funding arrangements preserve academic control—sponsors cannot suppress findings or dictate conclusions.

A faculty advisory board composed of tenured professors with no financial conflicts approves all major research initiatives and industry partnerships. Publication of research findings requires no sponsor approval. Graduate students maintain full discretion over dissertation topics regardless of funding sources.

1.4 Comparative Positioning

CDFT occupies a distinctive position in the landscape of digital finance research. Traditional programs in financial engineering, mathematics, and economics typically extend established theoretical

frameworks to accommodate new technologies. Technology-focused initiatives often prioritize protocol development and implementation over rigorous analysis of economic incentives and equilibrium outcomes.

The Center deliberately synthesizes these perspectives. It takes technological constraints, including computational complexity, cryptographic limitations, network latency, as seriously as any engineering program while insisting that economic incentives ultimately determine protocol viability. Neither lens alone suffices: technological feasibility without economic viability produces elegant solutions to nonexistent problems, while economic models that ignore implementation constraints generate infeasible designs.

This integrated approach extends to artificial intelligence and algorithmic trading. Rather than treating machine learning models as black boxes, CDFT embeds asset pricing theory and market microstructure principles directly into AI frameworks. The objective is not merely prediction but economic interpretability: understanding which market forces drive outcomes, how information aggregates through trading, and what systemic risks emerge from strategic interaction among automated agents.

2. Research Contributions and Open Source

Since its founding, CDFT has produced a substantial body of research addressing foundational questions in digital finance, blockchain economics, market design, and artificial intelligence in financial markets. This work spans theoretical analysis, empirical investigation, and computational methodology, consistently published in leading venues and deployed through open-source software. The following sections highlight key contributions organized by thematic area. The research papers and their summaries are all available at the CDFT website. See `https://godigital.engineering.columbia.edu/content/digital-finance`.

2.1 Blockchain Economics and Protocol Design

2.1.1 Robust Restaking Networks

Research by the CDFT faculty affiliate, Tim Roughgarden and PhD student Naveen Durvasula study restaking protocols, which allow validators to reuse staked capital across multiple blockchain services simultaneously, potentially improving capital efficiency but introducing new systemic risks. Their research characterizes the robust security of restaking networks as a function of the buffer between attack costs and attack profits.

The analysis establishes that if attack costs always exceed attack profits by a given margin, then worst-case stake losses from cascading failures can be bounded precisely. For example, if attack costs exceed profits by 10%, then a sudden loss of 0.1% of overall stake (e.g., due to a software error) cannot result in ultimate losses exceeding 1.1% of total stake. The work provides both global security guarantees for entire networks and local conditions applicable to specific services or coalitions.

These results suggest practical measures of robustness that could be exposed to protocol participants, along with polynomial-time computable conditions that can serve as sufficient proxies. The research provides the first rigorous framework for reasoning about cascading failures in restaking systems and has informed protocol design discussions within the Ethereum ecosystem. More details are available at Durvasula and Roughgarden (2025).

2.1.2 Economic Limits of Permissionless Consensus

Research by the CDFT faculty affiliate Tim Roughgarden and CDFT seminar speaker Eric Budish analyzes consensus protocols, and how they maintain distributed networks "in sync" despite unpre-

dictable communication and adversarial behavior. In permissionless settings, where participants operate anonymously with freely chosen identifiers, security arguments require both distributed computing proofs and economic analysis.

Their research establishes foundational economic conditions for permissionless consensus security. An ideal protocol should render consistency violations prohibitively expensive for attackers while avoiding collateral damage to honest participants. The work formalizes this intuition, characterizing when economic incentives alone can guarantee security and when additional assumptions about participant behavior are necessary.

This framework has influenced discussions of consensus mechanism design in major blockchain protocols and provides theoretical foundations for analyzing proof-of-stake systems, where economic incentives play a central role in security.

2.2 Decentralized Finance Mechanisms

2.2.1 Adoption of Decentralized Exchanges

Modern blockchains enable smart contracts to implement a broad range of financial services—borrowing and lending, derivative trading, insurance, and decentralized exchanges. Despite the potential efficiency gains, the adoption of decentralized finance (DeFi) exchanges faces significant challenges requiring careful analysis and appropriate guardrails.

CDFT Director Agostino Capponi and former PhD student Ruizhe Jia provide the first rigorous economic analysis of decentralized exchange adoption in a paper forthcoming in the *Review of Financial Studies*, one of the premier journals in finance. The research characterizes the fundamental trade-offs investors face when choosing between centralized and decentralized trading venues.

A central finding concerns arbitrage losses for liquidity providers in automated market makers. When prices move between blocks, arbitrageurs extract value from liquidity pools, creating a "price of decentralization" that investors must weigh against benefits such as censorship resistance, transparency, and reduced counterparty risk. The analysis quantifies these losses as a function of block time, volatility, and liquidity depth, providing concrete guidance for protocol design and investment decisions.

This research has informed discussions of DEX design at major protocols and influenced regulatory thinking about appropriate frameworks for decentralized trading venues. See Capponi and Jia (2025).

2.2.2 Loss-Versus-Fair: Efficiency of Dutch Auctions

CDFT faculty affiliate Ciamac C. Moallemi has analyzed the efficiency of automated market makers (AMMSs). These AMMs lose value to arbitrageurs when block times are discrete and asset prices evolve continuously. CDFT research extends this analysis to Dutch auctions, a mechanism increasingly used for on-chain token sales and trading.

The work calculates expected losses sellers face to arbitrageurs and expected time-to-fill as

functions of starting price, volatility, decay rate, and interblock time. For gradual Dutch auctions—where prices decline smoothly rather than in discrete steps—the analysis characterizes the trade-off between execution speed and execution quality.

These results provide concrete guidance for setting auction parameters and inform platform design choices. The framework has been applied by several DeFi protocols to optimize their auction mechanisms and by token projects to structure their distribution mechanisms more efficiently. More details are available at Moallemi and Robinson (2024).

2.3 Machine Learning and AI for Blockchain and Financial Markets

2.3.1 Agentic AI for Decentralized Governance

Decentralized Autonomous Organizations (DAOs) govern billions of dollars in digital assets through token-weighted voting on protocol upgrades, treasury allocation, and policy changes. However, DAO governance faces persistent challenges including low voter participation (frequently below 10%), concentrated voting power among large token holders, and information overload from complex technical proposals.

CDFT Director Agostino Capponi, in collaboration with IBM Research and Columbia master student Chunghyun Han, developed DAO-AI—an agentic AI framework that serves as an autonomous decision-maker in decentralized governance. Built on IBM's Agentics framework, DAO-AI orchestrates multiple specialized agents through Modular Composable Programs (MCPs) to analyze proposal metadata, forum discussions, voting dynamics, and market responses.

Empirical evaluation on over 3,000 proposals from eight major DAOs (Aave, Uniswap, Lido, Balancer, Arbitrum, 1inch, Metis, and Aura) demonstrates that DAO-AI's decisions align with final community outcomes in 92.5% of cases, compared to 76.6% for the average human voter. Beyond alignment, the research validates that AI-endorsed decisions exhibit ex-post economic validity: proposals supported by DAO-AI are followed by positive market responses (measured by token price and total value locked) at rates comparable to or exceeding human-approved baselines. The work demonstrates that agentic AI can augment collective decision-making in decentralized financial systems by producing interpretable, auditable, and empirically grounded governance signals.

2.3.2 SmartInv: Multimodal Learning for Invariant Inference

CDF Faculty affiliate Junfeng Yang has studied the formal verification of smart contracts. Those contracts enable diverse business activities on blockchains but suffer from "machine un-auditable" bugs that require understanding transaction logic across multiple contexts—source code, dynamic execution traces, and natural language specifications.

CDFT developed SmartInv, a framework that uses foundation models with a novel "Tier of Thought" (ToT) prompting strategy to reason across multiple modalities and generate invariants capturing expected contract behavior. By checking invariant violations, SmartInv identifies potential vulnerabilities automatically.

Evaluation on real-world contracts demonstrates that SmartInv generates 3.5× more bug-critical invariants and detects 4× more critical bugs compared to state-of-the-art tools, while running 150× faster. The system has uncovered 119 zero-day vulnerabilities in 89,621 deployed contracts, including five critical bugs confirmed by developers as high severity.

SmartInv has been released as open-source software and is used by security auditors and development teams to identify vulnerabilities before deployment. The multimodal learning approach represents a significant methodological advance in applying AI to blockchain security.

2.3.3 Agentic AI for Prediction Market Analysis

Prediction markets aggregate dispersed information into continuously updated price signals, but suffer from fragmentation: multiple contracts often refer to the same real-world proposition in different wording, while other contracts are economically linked through shared causal drivers, logical implication, or mutual exclusivity. This fragmentation creates search costs for traders, reduces liquidity concentration, and obscures opportunities to hedge risk or exploit mispricings.

Research by the CDFT Director, together with IBM research and CDFT PhD Student Brian Zhu introduces an agentic AI pipeline that autonomously organizes prediction market contracts into structured relationships. The system performs three tasks: (i) clustering markets into coherent topical groups using natural language understanding over contract text and metadata, (ii) identifying within-cluster market pairs whose resolved outcomes exhibit strong dependence, and (iii) distinguishing "same-outcome" relationships (correlated markets) from "different-outcome" relationships (anti-correlated markets).

Using historical data from Polymarket—a blockchain-native prediction market built on Polygon with billions in trading volume—the research evaluates the agent's relational predictions against realized outcomes. Analysis of 778 resolved binary markets from April–July 2025 shows that agent-identified relationships achieve 60–70% accuracy in predicting whether market pairs will resolve identically or oppositely.

2.4 Impact and Dissemination

Research contributions have achieved impact through multiple channels:

- Academic publication: Papers published in leading journals including Management Science, Operations Research, Review of Financial Studies, Journal of Financial Economics, and top computer science conferences including IEEE S&P, ACM CCS, and NeurIPS.

- Policy influence: Research findings cited in Federal Reserve white papers on stablecoins and digital currencies, European Central Bank reports on DeFi risks, and regulatory guidance documents from securities regulators.

  CDFT has contributed directly to public policy through collaboration with the Federal Reserve Bank of New York. A joint policy piece accessible at `https://libertystreeteconomics.`

newyorkfed.org/2022/12/can-decentralized-finance-provide-more-protection-for-crypto-inves examined how digital financial infrastructure affects systemic risk, liquidity provision, and market resilience.

- Industry adoption: Open-source software downloaded over 50,000 times; frameworks adopted by DeFi protocols with billions in total value locked; methodologies implemented by asset managers overseeing tens of billions in assets.

The breadth of impact reflects the Center's commitment to research that meets the highest academic standards while addressing questions of practical importance to industry and policymakers. Subsequent chapters document the educational programs, industry partnerships, and convening activities that amplify and extend this research impact.

2.5 Open-Source Software and Translational Research

CDFT has translated theoretical insights into open-source tools used by researchers and practitioners. All these source codes are accessible as Github repositories from the CDFT home page at `https://godigital.engineering.columbia.edu/content/software`.

- zkFuzz. A zero-knowledge circuit fuzzer designed to uncover vulnerabilities in ZK proof systems by identifying under- and over-constrained behavior. See
- SmartInv. An automated invariant inference framework addressing "machine-un-auditable" bugs in smart contracts, enabling scalable security analysis.
- Supply Chain GNN Asset Pricing. A graph neural network methodology aggregating firm characteristics across supply-chain networks to explain cross-sectional expected returns.
- Joint Diffusion Kalman Filter (JDKF) A supervised learning framework integrating diffusion maps with Kalman filtering for high-dimensional nonlinear systems.
- Agentic AI for Finance A modular research platform enabling autonomous financial analysis, backtesting, and strategy generation.

3. Talent Development and Academic Placement

CDFT has played a central role in training and mentoring early-career researchers who operate at the intersection of rigorous theory and real-world relevance. Flagship examples include Ruizhe Jia, who worked with CDFT Director Agostino Capponi and secured a faculty position at the Department of Management Science and Engineering at Stanford University. His research—developed in close connection with the Center's agenda in cryptoeconomics and decentralized market design—has resulted in three publications in leading finance journals:

- *Maximal Extractable Value and Allocative Inefficiencies in Public Blockchains* (*Journal of Financial Economics*);
- *Price Discovery on Decentralized Exchanges* (*Review of Financial Studies*);
- *The Adoption of Blockchain-Based Decentralized Exchanges* (*Review of Financial Studies*).

Another example is Kexin Pei, former PhD student supervised by CDFT Faculty affiliate, Junfeng Yang, and currently Assistant Professor at University of Chicago in Computer Science. Their work "SMARTINV: Multimodal Learning for Smart Contract Invariant Inference" funded by CDFT was published in the prestigious 45th IEEE Symposium on Security and Privacy.

All these papers provide a rigorous framework for understanding how decentralized trading protocols allocate priority, embed information in transaction fees, and generate economically meaningful frictions, all insights that are increasingly relevant for both industry design choices and policy discussions around market integrity and financial stability.

Beyond formal placements, the Center facilitates informal mentorship connecting junior researchers with senior faculty. For example, CDFT faculty affiliate Tim Roughgarden mentored PhD student Jason Milionis, whose joint research with Roughgarden and CDFT Board member Ciamac Moallemi on automated market makers led to his placement as Senior Researcher at Category Labs. These relationships emerge organically through CDFT seminars, collaborative research projects, and the Center's convening activities.

4. Community Building and Global Convening

A central pillar of CDFT's mission is to serve as a global convening platform that brings together scholars, practitioners, and policymakers working at the frontier of digital finance. Since its founding, the Center has organized major conferences, workshops, and educational programs that facilitate knowledge exchange, foster interdisciplinary collaboration, and strengthen the intellectual community around blockchain economics, decentralized finance, and AI in financial markets. These convenings complement CDFT's research and educational activities by creating forums for dissemination, debate, and relationship-building across institutional and geographic boundaries.

4.1 CDFT Summer School on Blockchain and Digital Assets

The CDFT Summer School on Blockchain and Digital Assets represents the Center's flagship educational convening, designed to provide rigorous technical training and foster community among emerging scholars in cryptoeconomics and digital finance. Co-organized with CBER (Crypto and Blockchain Economics Research Forum), École Polytechnique, and the DLT Science Foundation, the Summer School targets PhD students, postdoctoral researchers, and junior faculty conducting research in blockchain technology, decentralized finance, and related areas.

4.1.1 Program Structure and Content

The Summer School operates as an intensive two-day program combining lectures from leading academics and practitioners with interactive discussions and networking opportunities. The curriculum covers foundational topics in blockchain economics, cryptographic protocols, market design for decentralized systems, and emerging applications of AI in digital finance.

Lecture topics have included:

- Blockchain Fundamentals and Consensus Mechanisms: Technical foundations of distributed ledger technology, proof-of-work and proof-of-stake protocols, and the economics of validator incentives.
- Decentralized Finance Mechanisms: Automated market makers, lending protocols, derivatives, and the design of stablecoin systems.
- Market Microstructure in DeFi: Price formation, liquidity provision, maximal extractable value (MEV), and arbitrage dynamics in on-chain markets.

- Cryptoeconomic Security: Game-theoretic analysis of protocol security, collusion-resistance in mechanism design, and systemic risk in interconnected DeFi protocols.
- Empirical Methods: Data collection from blockchain networks, causal inference with on-chain data, and measurement challenges in decentralized systems.
- Regulatory and Policy Frameworks: Legal status of digital assets, central bank digital currencies, and regulatory approaches to decentralized finance across jurisdictions.

Faculty instructors have included CDFT members Agostino Capponi, Ciamac Moallemi, and Tim Roughgarden, alongside high-profile external scholars such as Darrell Duffie (Stanford), David Yermack (NYU), and Joel Hasbrouck (NYU), as well as practitioners from leading DeFi protocols including Uniswap and Flashbots.

4.1.2 Participation and Global Reach

The Summer School has attracted approximately 40 participants annually from institutions across Europe, North America, Asia, and Australia. Participants represent diverse disciplinary backgrounds including computer science, economics, finance, operations research, and law, reflecting the inherently interdisciplinary nature of blockchain research.

Competitive selection ensures that participants are actively engaged in high-quality research projects. The application process requires submission of a research statement or working paper, enabling organizers to curate cohorts with complementary expertise and shared intellectual interests. This selective approach creates an environment conducive to substantive technical exchange and potential research collaboration.

Geographic diversity strengthens the program's impact by facilitating knowledge transfer across regional research communities and exposing participants to different regulatory contexts, institutional frameworks, and research priorities. Participants from European institutions, for example, bring perspectives shaped by MiCA (Markets in Crypto-Assets) regulation, while those from Asia contribute insights on central bank digital currency implementations and blockchain adoption in emerging markets.

Figure 4.1: CDFT Summer School: global participation and interactive learning environment bringing together emerging scholars from multiple continents

4.1.3 International Partnerships

In a landmark development for global collaboration in digital finance research, CDFT established a formal strategic partnership with ETH Zurich's FinsureTech Hub and the National University of Singapore's Asian Institute of Digital Finance (AIDF). Formalized through a Memorandum of Understanding signed by the three institutions, this partnership represents a commitment to advancing research, education, and service in digital finance and technologies across three major financial hubs: New York, Zurich, and Singapore.

The partnership brings together institutions renowned for leadership in digital finance and financial technology. Columbia's CDFT provides expertise in blockchain economics, decentralized finance, and AI applications to financial markets, alongside deep connections to the New York financial services industry and regulatory community. ETH Zurich's FinsureTech Hub combines strengths in mathematical finance, computational methods, and insurance technology, leveraging Switzerland's position as a hub for wealth management, derivatives markets, and crypto innovation. NUS's Asian Institute of Digital Finance offers insights into digital payment systems, central bank digital currencies, and fintech adoption in emerging markets, drawing on Singapore's role as a leading financial center and regulatory sandbox for financial innovation.

Spanning Asia, Europe, and North America, the partnership creates opportunities for comparative research across regulatory regimes, market structures, and technological adoption patterns. Collaborative efforts encompass joint research projects, faculty and student exchanges, shared educational programs, and coordinated industry engagement. The geographic distribution enables round-the-clock research activity and access to diverse data sources, regulatory environments, and practitioner communities.

Columbia-ETH-NUS FinsureTech Conference

The partnership's flagship convening activity is the annual Columbia-ETH-NUS FinsureTech Conference, which brings together researchers, industry practitioners, and policymakers to present

cutting-edge work at the intersection of finance, insurance, and technology. The inaugural conference was held at ETH Zurich in 2024 as part of the Point Zero Forum, a broader gathering focused on blockchain and digital finance innovation. The conference featured a full-day program organized into four sessions covering machine learning for financial risk management, decentralized finance mechanisms, large language models in finance, and emerging research by PhD students. The conference was organized by Prof. Ying Chen (NUS), Prof. Agostino Capponi (Columbia), Dr. Bastian Bergmann (ETH Zurich), and Prof. Patrick Cheridito (ETH Zurich), reflecting the partnership's collaborative governance structure.

The conference attracted participants from academic institutions, technology firms, and financial services companies across Europe and beyond.

Figure 4.2: Columbia-ETH-NUS FinsureTech Conference 2024 at ETH Zurich: participants from academia and industry engaged in presentations spanning machine learning, decentralized finance, and computational methods

Featured presentations included Ying Chen's on experimental quantum computing and its applications to portfolio Optimization; CDFT faculty affiliate Vineet Goyal presented "Online Matching with Reusable Capacities," addressing algorithmic problems relevant to platform markets and resource allocation. A dedicated session examined applications of large language models to financial problems, including Enrique Alfonseca from Google research who spoke about large language models and web search, and Josef Teichmann who analyzed whether LLMs genuinely "understand" financial concepts or merely pattern-match on surface statistics, with implications for reliability in high-stakes financial applications. A distinctive feature of the conference was a dedicated session for PhD student research, creating opportunities for emerging scholars to present work-in-progress and

receive feedback from senior researchers across institutions. Keane Ong Wei Yang (NUS) presented on explainable NLP methods for sustainable finance, while CDFT PhD student Jason Milionis presented on fundamental sources of value loss for liquidity providers in automated market makers.

Long-term Vision and Sustainability

The partnership is structured for long-term sustainability through rotating leadership, shared funding responsibilities, and institutionalized mechanisms for collaboration. Annual planning meetings bring together leaders from the three institutions to review progress, identify opportunities for deeper integration, and adjust priorities based on emerging research questions and technological developments.

Future directions under discussion include:

- Expanded geographic reach: Potential inclusion of additional partner institutions in other regions, particularly Latin America and Africa, to broaden geographic diversity and research scope.
- Practitioner fellowship programs: Bringing industry practitioners to spend extended periods at partner institutions, facilitating knowledge transfer and collaborative research on implementation challenges.
- Policy engagement: Coordinated engagement with regulatory agencies and international standard-setting bodies, leveraging the partnership's multi-jurisdictional perspective to inform policy discussions.
- Open-source infrastructure: Joint development of software tools, datasets, and computational resources that can be shared across institutions and made publicly available to support broader research communities.

4.2 Digital Finance Seminar Series

CDFT hosts the Digital Finance Seminar Series jointly with the Digital Finance Initiative at Columbia Business School directed by the CDFT Faculty affiliate, Ciamac Moallemi. The seminar provides a regular forum for dissemination of cutting-edge research by academics and practitioners in digital finance, blockchain economics, and financial technology.

The seminar series has featured presentations by leading scholars and industry practitioners including Darrell Duffie (Stanford), Albert Kyle (Maryland), Eric Budish (Chicago), Markus Brunnermeier (Princeton), Georgios Konstantopoulos (Paradigm), and Barnabe Monnot (Ethereum Foundation). Topics span theoretical mechanism design, empirical analysis of decentralized markets, protocol engineering, and regulatory frameworks.

Video recordings of seminar presentations are made publicly available through the CDFT website (`godigital.engineering.columbia.edu/seminar-series`), extending the seminar's impact beyond attendees and creating a permanent educational resource for the research community.

The regular cadence of seminars—typically bi-weekly during the academic year—creates sustained engagement opportunities and helps maintain CDFT's visibility within the digital finance research community. The joint organization with Columbia Business School strengthens connections between engineering and business school faculty while exposing MBA students and finance practitioners to technical developments in blockchain systems.

4.3 CBER Crafting the Cryptoeconomy Conference

In October 2025, CDFT hosted the CBER (Crypto and Blockchain Economics Research Forum) Crafting the Cryptoeconomy Conference, a two-day flagship event that brought together approximately 100 participants from academia, industry, and policy institutions. Sponsored by the Avalanche Foundation and Uniswap Foundation, and held at Columbia's Engineering Innovation Hub, the conference represented one of the premier gatherings for blockchain economics research and practice.

The organizing committee, led by CDFT Director Agostino Capponi, included Brad Bachu (Uniswap Labs), Nir Chemaya (Ben-Gurion University), Kose John (NYU Stern), Andreas Park (University of Toronto), Fahad Saleh (University of Florida), and Aviv Yaish (Yale University). An advisory committee of 15 distinguished scholars and industry leaders—including CDFT Faculty affiliate Ciamac Moallemi (Columbia/Paradigm), Barnabé Monnot (Ethereum Foundation), Joel Hasbrouck (NYU Stern), David Yermack (NYU Stern), and representatives from Circle, Uniswap Foundation, and Ava Labs—provided guidance on program content and ensured alignment with emerging research priorities and industry needs.

The conference's keynote address featured Darrell Duffie, Dean Witter Distinguished Professor of Finance at Stanford University and member of the CDFT Advisory Board. Professor Duffie's talk, "How Stablecoins are Changing the Financial System," examined the economic implications of algorithmic and asset-backed stablecoins for monetary transmission, payment systems, and financial stability. A distinguishing feature of the conference was the integration of technical presentations by protocol developers alongside academic research sessions. These "special sessions" provided detailed exposure to production systems managing billions of dollars in value, creating opportunities for researchers to understand implementation constraints, design choices, and operational challenges that academic models often abstract away.

These presentations sparked substantive discussion about fundamental design trade-offs in blockchain systems: how consensus mechanisms affect validator incentives, the relationship between block time and MEV extraction, and the implications of different approaches to state management for composability across protocols.

The conference attracted researchers from leading institutions globally. Academic participants represented MIT, Stanford, Yale, University of Pennsylvania, Oxford, Imperial College, Tel Aviv University, National University of Singapore, École Polytechnique, and others, alongside the core organizing institutions. Industry participants included protocol developers and researchers from Ava Labs, Anza (Solana), Uniswap Labs, Paradigm, Flashbots, Ethereum Foundation, Panoptic,

CoW Protocol, Circle, and Consensys.

Figure 4.3: CBER Crafting the Cryptoeconomy Conference, October 2025: academic researchers, protocol developers, and industry practitioners engaged in technical discussions spanning mechanism design, market microstructure, and protocol architecture

4.3.1 Comparison with Other Venues

The CBER conference occupies a distinctive position in the landscape of blockchain-focused events. Unlike industry conferences that prioritize networking and product announcements, CBER maintains rigorous academic standards for research presentations while ensuring technical depth in industry talks. Unlike purely academic conferences that may lack practical grounding, CBER deliberately integrates practitioners who provide implementation context and data access.

This hybrid model creates value that neither pure academic nor pure industry venues can provide: researchers gain exposure to production systems and real-world constraints, while practitioners engage with rigorous analytical frameworks that can inform protocol design and risk management. The sustained collaboration between CDFT and CBER suggests this model has found product-market fit within the blockchain research community, addressing a genuine need for venues that bridge the academic-practice divide with intellectual seriousness.

4.4 Impact Assessment

The Center's analytics demonstrate sustained engagement: the CDFT mailing list currently has 1,136 subscribers with an average email open rate of approximately 60%—far higher than typical nonprofit benchmarks—and click rates around 6%.

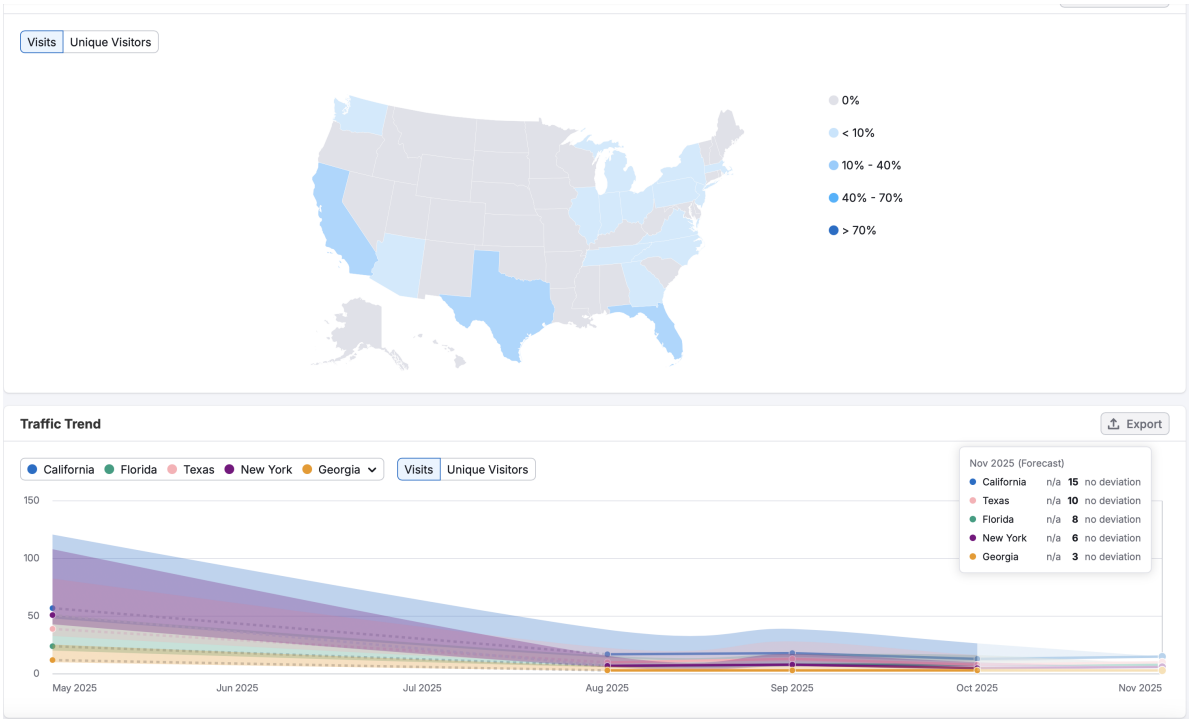

Figure 4.4: Geographic distribution of CDFT website traffic (May-October 2025), demonstrating global reach across continents with particular strength in North America, South Asia, Europe, and Australia. Traffic originates from major financial and technology centers, reflecting the international composition of the digital finance research community.

Within the United States, traffic is concentrated in states with major research universities and financial centers: California (22%), Texas (14%), Florida (14%), New York (8%), and Georgia (5%). This pattern suggests engagement from both academic researchers and financial services professionals in major hubs.

Analysis of page visits reveals that users engage primarily with research outputs (working papers, publications), event announcements and recordings, and educational resources. The seminar series video archive receives particularly strong engagement, with individual recordings averaging several hundred views and popular presentations exceeding 1,000 views. This suggests that recorded content extends the impact of convenings far beyond direct participants.

Website traffic shows consistent engagement from researchers and practitioners globally, with substantial representation from the United States, India, Australia, Switzerland, and Pakistan.

4.5 Industry Affiliates and Knowledge Translation

CDFT collaborates strategically with a select group of industry and institutional affiliates, creating pathways for research translation, data access, and mutual learning between academia and practice. These partnerships operate through multiple mechanisms including sponsored research projects, advisory relationships, thought leadership initiatives, technology transfer, and practitioner engagement.

4.5.1 Global Risk Institute

CDFT maintains a strategic partnership with the Global Risk Institute (GRI), a Toronto-based nonprofit organization that serves as a hub for risk management research and knowledge exchange in financial services. This collaboration focuses on translating academic research into accessible insights for industry practitioners and policymakers.

A cornerstone of the CDFT-GRI partnership is the production of thought leadership reports that synthesize cutting-edge research for practitioner audiences. CDFT Director Agostino Capponi has authored multiple reports published under GRI's aegis. They include *The Transformative Role of AI & Machine Learning in Financial Services* published in April 2025 and *Sustainability and Digital Finance* in September 2025.

These reports serve multiple functions: they disseminate CDFT research findings to practitioner audiences in accessible formats, they identify practical implementation challenges that inform future research directions, and they establish CDFT's credibility as a source of rigorous, policy-relevant analysis.

4.5.2 Ripple

CDFT maintains a multifaceted relationship with Ripple, a leading blockchain technology company focused on cross-border payments and enterprise blockchain solutions. This partnership encompasses research sponsorship, data access, and knowledge exchange through multiple channels.

Ripple has provided research funding to CDFT, supporting projects on blockchain scalability, consensus mechanisms, cross-border payment systems, and regulatory frameworks for digital assets. Research outputs from Ripple-sponsored projects have appeared in top-tier academic journals and conferences, contributing to the broader understanding of blockchain economics and payment system design.

CDFT Director Agostino Capponi has participated in Ripple's internal "Lunch and Learn" series, where he exchanged perspectives with Ripple engineers, product managers, and business development teams. These sessions create opportunities for direct dialogue between academic researchers and practitioners, with Ripple staff providing feedback on practical implementation challenges and CDFT researchers explaining theoretical frameworks and empirical findings. Topics covered in these sessions have included decentralized exchanges, automated market makers, and stable coins.

4.5.3 Fi-Tek

CDFT has established a technology transfer partnership with Fi-Tek, a financial technology firm specializing in wealth management platforms. This collaboration focuses on translating academic research on agentic AI and robo-advising into production-ready software for institutional deployment.

Fi-Tek has given guest lectures at Columbia courses, such as the "Agentic AI, Fintech, and Data Economy" taught at Columbia in Fall 2025. This creates a feedback loop where academic

models and research is informed by operational challenges faced by Fintech firms. This collaborative development model has proven particularly effective for bridging the gap between academic research and commercial deployment.

4.5.4 Lenovo Research

CDFT collaborates with Lenovo Research on computational infrastructure and high-performance computing applications to financial machine learning. This partnership addresses a practical constraint faced by academic research: the substantial computational requirements of modern machine learning and AI methods often exceed the resources available through university infrastructure.

4.5.5 Fidelity Investments

CDFT maintains a research relationship with Fidelity Investments, one of the world's largest asset managers. This partnership focuses on guidance about research questions in asset management, portfolio construction, and investor behavior, and assistance in reviewing proposals funded by the Center.

4.5.6 Amber Data

CDFT collaborates with Amber Data, a data provider in the area of digital asset markets. This partnership provides CDFT researchers with access to high-quality market data, including order book snapshots, trade-by-trade execution data, and on-chain transaction records across multiple cryptocurrency exchanges and blockchain networks.

4.5.7 Impact and Value Creation

These industry partnerships create value through multiple channels:

Research funding: Industry sponsorship provides financial resources that support PhD students, postdoctoral researchers, and research infrastructure, enabling CDFT to pursue ambitious research agendas that would be difficult to fund through traditional academic sources alone.

Research translation: Partnerships create pathways for academic research to inform practical applications, whether through technology transfer (as with Fi-Tek), thought leadership reports (as with GRI), or direct consultation (as with Ripple). This translation accelerates the impact of research and ensures that academic insights reach practitioner audiences.

Problem identification: Engagement with industry partners exposes CDFT researchers to practical problems and implementation challenges that can inspire new research directions. Many of CDFT's funded research originates from questions raised in conversations with industry partners.

Student career development: Industry partnerships create opportunities for PhD students to engage with practitioners, understand industry problems and constraints, and establish relationships that support subsequent career transitions to industry positions.

CDFT carefully structures these partnerships to preserve academic integrity and research independence while creating genuine value for industry partners. Research agreements explicitly protect academic freedom, with CDFT researchers retaining full control over research questions, methodologies, and publication decisions.

Figure 4.5: CDFT's industry and institutional affiliates, spanning wealth management technology (Fi-Tek), risk management research (Global Risk Institute), enterprise computing (Lenovo Research), and blockchain payments (Ripple). These partnerships facilitate research translation, data access, and bidirectional knowledge exchange between academia and practice.

5. Research Funding and Internal Grants Program

A core component of CDFT's mission is to catalyze innovative research across Columbia University through competitive internal grant awards. The Center's research grants program supports projects that advance understanding of digital finance, blockchain technology, and financial innovation while fostering interdisciplinary collaboration across computer science, statistics, operations research, business, and economics.

CDFT's research grants program operates through annual calls for proposals open to Columbia faculty, with collaborative projects involving external institutions encouraged. The program is designed to support early-stage, high-risk research that may not yet be sufficiently developed for submission to traditional federal funding agencies, enabling investigators to establish proof-of-concept results, collect preliminary data, and develop frameworks that can subsequently be scaled through NSF, DARPA, or other external funding sources.

Grant proposals are evaluated by a review committee composed of members of CDFT's Board of Directors, ensuring assessment by individuals with deep expertise spanning both academic research and practical implementation. The Board's composition—including representatives from Ripple, Lenovo, Fi-Tek, Ethereum Foundation, and Fidelity alongside distinguished academic researchers—enables evaluation that considers both scientific rigor and real-world relevance. Review criteria emphasize scientific merit, practical relevance, interdisciplinary collaboration, alignment with CDFT mission, feasibility, and team qualifications.

The mixed academic-industry composition of the review committee provides multiple perspectives on proposed research, with academic members assessing scientific soundness and contribution to knowledge, while industry members evaluate practical feasibility and relevance to real-world systems. In the appendix, we list everyone at Columbia who has been involved in the Center, either as faculty affiliate, board of director, or whose research has been supported by the center.

5.1 Research Funding and Internal Grants Program

Since its inaugural funding cycle in 2023, CDFT has awarded grants totaling over $350,000 supporting research across blockchain protocol design, smart contract security, machine learning for contract verification, decentralized market microstructure, central bank digital currencies, and supply chain applications. The grants program catalyzes innovative research across Columbia University through competitive awards evaluated by CDFT's Board of Directors—a committee comprising distinguished academics alongside industry leaders from Ripple, Lenovo, Fi-Tek, Ethereum Foun-

dation, and Fidelity. This mixed composition ensures proposals are assessed for both scientific rigor and practical relevance to real-world systems.

Funded projects address some of the most pressing challenges in digital finance and blockchain technology. CDFT faculty affiliate Junfeng Yang (Computer Science) received funding to develop machine learning techniques for automated smart contract verification. Yang's research combines program analysis with deep learning, training models on large corpora of smart contracts to recognize common patterns and potential vulnerabilities. A related funded project by Yang in the next round extends this work by building SMARTEST, a multi-modal large language model system that improves fuzzing performance on smart contracts. The system combines code analysis, natural language understanding of documentation and developer comments, and execution trace analysis to identify vulnerabilities deeply embedded in execution paths while understanding developers' business and functional intents. See Wang et al. (2024) for details.

CDFT faculty affiliate Jay Sethuraman and Board member Garud Iyengar received funding to study governance in digital marketplaces ranging from decentralized exchanges to NFT platforms. Their research addresses fundamental questions about rules, fees, and information disclosure, developing game-theoretic models of marketplace competition that examine how governance choices affect market outcomes including liquidity, price efficiency, and product diversity. To learn more about it, see Iyengar et al. (2023).

CDFT Board member Tim Roughgarden used CDFT funding to investigate transaction fee mechanisms that redistribute maximal extractable value (MEV) more equitably while preserving incentive compatibility and efficiency. MEV is profit extractable by reordering, inserting, or censoring transactions, and represents a major challenge for blockchain systems, benefiting sophisticated actors with specialized infrastructure while harming ordinary users through increased costs and reduced fairness. More detauls about this work are available at Bahrani et al. (2024).

Yiming Ma (Columbia Business School) received funding to examine the macroeconomic and financial stability implications of central bank digital currencies. CBDCs have been proposed or implemented by dozens of countries, but their effects on bank deposits, credit provision, monetary policy transmission, and financial stability remain poorly understood. The work informs policy discussions at central banks including the Federal Reserve and European Central Bank, with results presented to policymakers and cited in official white papers.

CDFT faculty affiliate Vineet Goyal received funding to address coordination challenges in blockchain adoption for supply chain management. While blockchain promises improved transparency and efficiency, individual firms may lack incentives to adopt even when collective adoption would benefit the entire supply chain. The research develops mechanism design and contract theory frameworks for incentivizing blockchain adoption in multi-tier supply chains, characterizing optimal subsidy schemes, liability allocation rules, and information sharing arrangements that align individual incentives with socially optimal adoption. Applications include food safety traceability, pharmaceutical supply chain authentication, and sustainable sourcing verification.

Wenpin Tang (Industrial Engineering and Operations Research) received funding to address scalability challenges arising from blockchain systems' massive high-dimensional datasets encom-

passing transaction records, network topology, and validator behavior. The research leverages techniques from high-dimensional statistics, stochastic networks, and game theory to devise scalable algorithms for processing blockchain data in real-time, develop statistical inference methods with high-dimensional robustness for anomaly detection and parameter estimation, and use these tools to analyze economic incentives and inform protocol design. The output of this research is available at Tang and Yao (2023).

CDFT funded Simha Sethumadhavan (Computer Science) to address a critical security challenge: while software vulnerabilities create severe risks, patching systems often results in performance degradation and user frustration, discouraging timely updates. The project proposes a compensation scheme using smart contracts to automate patch management.

Marcel Nutz and Steven Campbell (Statistics) received funding to address liquidity provider losses in automated market makers. Liquidity providers in AMMs suffer predictable losses from adverse selection, particularly during volatile market conditions, and current static fee structures inadequately compensate them. The funded project develops comprehensive simulation-based frameworks for designing and evaluating variable fee mechanisms that adapt dynamically to market conditions including volatility, trading volume, and arbitrage pressure. Their work has been conducted jointly with the PhD student CDFT affiliate, Jason Millionis, again to exempkify the interdisciplinary collaborative effort across faculty and PhD student affiliates. Their research findings have been reported at Campbell et al. (2025).

CDFT Board member Ciamac Moallemi received funding to develop methodologies for optimal trade routing across multiple AMMs with complex hooks and fee structures. In modern DeFi ecosystems, traders face dozens of potential execution venues, each with different liquidity depths, fee schedules, and execution characteristics. The project develops routing algorithms based on online learning, reinforcement learning, and meta-learning that adaptively learn optimal execution strategies without requiring complete knowledge of market structure, addressing both single-trade routing and dynamic routing as market conditions evolve.

These funded projects have generated substantial intellectual and practical impact. Grant-funded research has produced publications in top-tier venues including leading finance journals and computer science conferences, with multiple working papers currently under review at premier outlets.

Funded projects have supported numerous PhD students and postdoctoral researchers, providing financial support and research opportunities that have led to successful academic job placements, industry research positions, and entrepreneurial ventures.

The grants program facilates collaborations between researchers from different departments and schools who might not otherwise have worked together (a prominent example is the collaboration between Ciamac Moallemi from the Columbia Business School and Tim Roughgarden from the Department of Computer Science), strengthening Columbia's research ecosystem in digital finance.

5.1.1 Program Evolution and Future Directions

CDFT's grants program continues to evolve based on experience and emerging research priorities. Recent enhancements include:

- Expanded scope: Later funding cycles have broadened eligible topics to include AI applications in finance, reflecting the increasing importance of machine learning and large language models in financial services.
- Industry mentorship: Pilot initiatives connecting grant recipients with industry advisors from Board member organizations for guidance on practical implementation and data access.

The success of the grants program demonstrates CDFT's effectiveness as a catalyst for high-impact research that advances both academic understanding and practical application of digital finance technologies. By providing flexible early-stage funding, facilitating interdisciplinary collaboration, and maintaining close connections between academic research and industry practice, the program fulfills a crucial niche in the research funding ecosystem while advancing CDFT's mission of rigorous, policy-relevant scholarship in digital finance.

5.2 Media Impact and Recognitions

5.2.1 Media Impact

CDFT research has received significant international media attention, reflecting its relevance beyond academia and its influence on public discourse around digital finance. In particular, a Bloomberg feature highlighted the Center's work on price discovery and information transmission in decentralized exchanges. The article, titled *"Crypto DeFi's Highest Bidders at Center of Market-Moving Crypto Trades,"* reported on research demonstrating that transaction fees on decentralized exchanges encode economically meaningful information and systematically reflect traders' private information.

Drawing on the paper *"Price Discovery on Decentralized Exchanges"* Bloomberg emphasized the finding that traders who pay the highest fees tend to trade earlier and more aggressively, often ahead of market-moving price changes. This evidence challenges the common narrative that decentralized finance inherently democratizes access to markets, instead showing that priority mechanisms and fee-based ordering can replicate informational advantages familiar from traditional financial markets.

The coverage framed CDFT's research as providing one of the first rigorous empirical validations that blockchain transaction data can serve as a public signal of informed trading activity. By situating these results within the broader context of market integrity, fairness, and the design of decentralized trading protocols, the Bloomberg article underscored the Center's role in shaping how policymakers, practitioners, and the public understand the economic consequences of decentralized financial infrastructure.

5.2.2 Recognition and Awards

CDFT faculty have received prestigious recognition for their contributions. In 2025, CDFT Director Agostino Capponi received the Presidential Early Career Award for Scientists and Engineers (PECASE), the highest honor bestowed by the U.S. government on outstanding scientists and engineers beginning their independent careers. This recognition acknowledges Capponi's groundbreaking work on blockchain economics, decentralized finance mechanisms, and the application of stochastic control theory to digital asset markets.

CDFT Board member Tim Roughgarden was elected Fellow of the Association for Computing Machinery (ACM), one of computing's most prestigious honors, recognizing individuals who have made fundamental contributions to the field. Roughgarden's election acknowledges his pioneering work at the intersection of computer science and economics, particularly his contributions to algorithmic game theory, mechanism design, and blockchain protocol analysis.

CDFT faculty affiliate Junfeng Yang received dual prestigious awards in 2025. He was honored with the ACM SIGOPS Mark Weiser Award at the Symposium on Operating Systems Principles (SOSP), recognizing the most influential paper from the symposium ten years prior. Yang also received the IEEE Test of Time Award, acknowledging research whose impact has grown substantially over time and continues to influence the field. These awards recognize Yang's foundational contributions to software systems security and verification, work that has direct applications to smart contract security and blockchain system reliability.

CDFT faculty affiliate Adam Elmachtoub received the 2024 INFORMS Donald P. Gaver, Jr. Early Career Award for Excellence in Operations Research, which recognizes outstanding early-career researchers who have made significant contributions to operations research and management science. Elmachtoub's award acknowledges his work on data-driven optimization, online learning, and their applications to revenue management and marketplace design—research with direct relevance to decentralized market mechanisms.

The awards span multiple disciplines and professional societies, demonstrating the inherently interdisciplinary nature of digital finance research and CDFT's success in attracting and supporting scholars whose work bridges traditional academic boundaries. Beyond individual recognition, these honors raise CDFT's profile within academic and industry communities, strengthening the Center's ability to attract top talent, secure research funding, and influence both scholarly discourse and practical implementations in digital finance and blockchain technology.

6. Future Research Agenda (2026–2029)

Building on its formative period, CDFT has articulated a forward-looking research and impact agenda focused on scaling its intellectual leadership, strengthening translational pathways, and deepening engagement with industry and policy institutions. The future agenda is organized around three complementary initiatives: (i) an accelerator and incubation program, (ii) a strategic expansion at the intersection of AI and Web3, and (iii) the creation of a blockchain data hub. Together, these initiatives position CDFT as both a generator of foundational research and a catalyst for responsible innovation in digital finance.

6.1 Accelerator and Research-to-Impact Program

CDFT plans to launch an accelerator-style program designed to bridge the gap between academic research and real-world deployment in digital finance and blockchain technologies. This initiative builds on discussions initiated during the Center's Bay Area engagement in November 2025, which led to concrete interest from ecosystem partners and investors.

The proposed accelerator model would provide selected research projects with:

- Financial support, including up to $500k in investment per project at a $7M post-money SAFE valuation, alongside approximately $750k in compute credits and startup resources through SkyDeck;
- Professional services, including up to 30 hours per year of pro-bono legal support on intellectual property and immigration matters from leading law firms such as Gunderson Dettmer and Goodwin Procter, as well as free incorporation and discounted legal rates;
- Ecosystem engagement, including monthly office hours with operators and investors, monthly on-campus meetups, and an annual hackathon hosted at Haas Berkeley.

This program is designed not as a startup incubator in the narrow sense, but as a structured mechanism to help research teams explore translational pathways while preserving academic rigor. By combining capital, compute, legal infrastructure, and mentorship, CDFT aims to reduce friction in moving from theory to deployment, particularly in areas such as market design, blockchain infrastructure, and financial analytics.

6.2 Strategic Focus Area: AI and Web3

A second pillar of the future agenda is the establishment of a dedicated strategic focus area on AI and its intersection with Web3. This initiative reflects the Center's recognition that agentic artificial intelligence and decentralized systems are converging rapidly, with profound implications for financial markets, governance, and institutional design.

Key objectives of this initiative include:

- Establishing AI & Web3 as a formal research thrust within CDFT, spanning theory, systems, and applications;
- Launching a targeted fundraising initiative centered on the *AI & Web3* theme, with ongoing discussions involving industry and investment partners such as Pantera Capital;
- Building on existing research outputs, including CDFT white papers and academic work on AI-driven voting systems, prediction markets, and agentic financial decision-making.

This focus area will leverage CDFT's existing strengths in market design, cryptoeconomics, and machine learning, while expanding into new questions around automated governance, algorithmic incentives, and the safety and alignment of agentic systems in financial environments.

6.3 Blockchain Data Hub Initiative

The third flagship initiative in CDFT's future agenda is the creation of a Blockchain Data Hub. This effort aims to address one of the most significant bottlenecks in blockchain and digital-asset research: the lack of standardized, reliable, and accessible datasets.

CDFT plans to establish the data hub in partnership with leading ecosystem participants, including Ripple, Anza Labs, the Uniswap Foundation, and Allium. The initiative will focus on:

- Creating standardized datasets covering major areas of blockchain research, with partners providing data in CDFT-prescribed formats to ensure usability and consistency;
- Offering clean, well-documented, and uniform datasets that replace the current ad hoc and fragmented data-collection process;
- Positioning CDFT as a trusted, neutral data provider for the research community, analogous in spirit to WRDS in traditional finance.

The data hub is envisioned to launch initially as a free service for academic researchers, with a long-term plan to transition to a sustainable, subscription-based model. By attracting broad participation across the crypto ecosystem, this initiative aims to strengthen CDFT's role as a central infrastructure provider for blockchain research worldwide.

6.4 Strategic Outlook

Taken together, these initiatives reflect CDFT's commitment to scaling its impact while remaining anchored in rigorous research. The future agenda emphasizes:

- sustained intellectual leadership in cryptoeconomics and digital finance;
- structured pathways from research to real-world implementation;
- responsible engagement with industry and policymakers;
- long-term institutional sustainability.

Through this agenda, CDFT seeks to consolidate its position as a global reference point for the study and design of digital financial systems in the coming decade.

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