Introduction to Blockchain

Overview

Distributed ledgers and decentralized protocols are quickly establishing themselves as preeminent forces in information technology. The ascent of the blockchain has the potential to be one of the most disruptive global technology trends since the proliferation of the internet. Blockchain adoption can drastically affect transaction processing dynamics, all forms of record keeping, supply chain management, and securities trade settlement. These ramifications will have pronounced impacts on all industries with a particular emphasis on financial services.

Although the blockchain is most commonly known as being the technology behind Bitcoin, blockchain's reach and scope has much broader applications beyond just cryptocurrencies. Blockchains can effectively eliminate the need for intermediaries and 3rd parties in many forms of transactions. Some significant benefits of blockchains and decentralized ledgers consist of potentially higher levels of trust and transparency, lower costs, and new forms of capital raising.

This interactive and structured one day seminar works to supply attendees with a elementary awareness of what blockchain technology is, along with a conceptual understanding of its potentially far reaching use applications in the financial world including venture capital.

Please note, this is not a programming-based course. We will teach the fundamental concepts, but if your objective is to learn how to build an actual Blockchain implementation in Hyperledger or on Ethereum, you will not learn that in this course since business and financial professionals will likely not have to do this on the job.

This course will focus primarily on explaining the basic mechanics of public blockchains such as Bitcoin Core in a qualitative, general sense as opposed to looking at private distributed ledger implementations like the blockchain as a service (BaaS) platforms offered by the larger, technology vendors such as IBM, Microsoft, and Oracle.

Who This Course is For

Widespread blockchain adoption and everyday application are probably still at least a few years away. This course will help students stay prepared and well ahead of the curve for this technology's promising further implementation. The course will be informative for those wishing to gain a fundamental awareness of the following three major use cases pertinent to the business world, specifically for the financial industry:

I. Cryptocurrencies and digital assets as a new, alternative asset class

II. Tokenization through blockchain, ICOs and their influence on venture capital and startup funding vehicles
III. Blockchain integration in securities clearing, settlement, and trade finance

Course Objectives

At completion of this course, attendees should be able to achieve the following goals:

- Become informative and speak intelligently about blockchain types, mechanics, terminology, processes, and governance in the context of the Bitcoin blockchain
- Learn how blockchain and token issuance may shape the future of financing for new projects and initiatives in comparison to traditional means such as angel and seed financing, venture capital, equity and debt
- Be able to illustrate potential use case applications of smart contracts and related mechanisms for trade finance, derivatives, securities settlement and other financial instruments
- Assess and evaluate the benefits of implementing distributed ledgers to increase efficiencies for general operational activity, information sharing, and record keeping
- Understand the genesis and impact of a new asset class, native digital assets/currencies, and their impact on asset allocation, risk, and portfolio management
- Intelligently assess and discuss potential drawbacks of blockchains, including the challenges of using blockchain for a specific use case implementation

Course & Contact Information

Course Prerequisites: *None*
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Course Curriculum

- **Overview of Blockchains and Distributed Ledgers**
  - Global commitment to blockchain by large financial institutions and corporations
  - Blockchain's expectation as the next major paradigm in computing following cloud
  - Commitment and other initiatives in distributed ledger technology by major corporations
  - Boom, bust, fad aspects of blockchain implemented by struggling enterprises over the past couple years
- **Centralized vs. Decentralized Computing**
  - Differentiation of centralized and decentralized systems including the characteristics, benefits, and shortcomings of each
- **Blockchain Components and Structures**
  - Basic components (blocks, nodes, etc.) that encompass a blockchain including the technical terms and mechanics that drive each

- Distinction between public and private blockchains and what the benefits and drawbacks are of each form
- Fundamental traits and characteristics of large, public blockchains including immutability, consensus, security, and operating protocols
- Integration of cryptography and pseudo-anonymity in public blockchains

- **Public Blockchain Governance and Consensus Protocols**
  - Consensus protocol use in public blockchains like Bitcoin Core, including cryptography and the governance of a network of comprised of many different and unknown parties
  - Game theory and incentive structures incorporated in public blockchains
- **Digital Assets as a New Asset Class ("Cryptoassets")**
  - Native digital tokens and cryptocurrencies used to power networks of parties that do not know or trust one another
  - Why public blockchains include digital assets, tokens, and currencies and why private blockchains/distributed ledger systems do not
  - Digital assets and currencies as an alternative asset class and their impact on asset management, correlations to traditional assets, etc.
- **The Influence of Tokens and ICOs on Project/Venture Finance**
  - Public blockchains and digital assets (including ICOs and ITOs) as a financing mechanism compared to traditional angel or venture funding
  - Process behind launching a financing initiative using blockchain, including white papers, token sales, terms, and risks
- **Blockchain Implementation in Capital Markets and Securities Settlement**
  - Blockchain and distributed ledger use cases for trade settlement, international trade finance, contracts, and derivatives
- **In Class Team Project - Building a Conceptual Blockchain/DLT Use Case**

Course Content Developers

David Haber

David heads Cognitir's products and technology. He has led programming workshops at the undergraduate and graduate levels, at blue chip companies, and world renowned management consulting firms.

David has experience working with both startups and large corporations. Previously, he was a lead software and machine learning engineer at Soma Analytics, an investor-backed and award-winning health-tech startup in London. David also worked on optimizing large-scale payment processing systems at Deutsche Bank in Singapore. Outside of Cognitir, he currently advises HiDoc, an early stage digital health startup in Germany.

David holds an MEng (First-Class Honours) in Computer Science from Imperial College London (UK) where he focused on statistical machine learning. He presented his work at international

conferences and won several awards for his work. During his studies, he also served as a teaching assistant at Imperial College where he helped undergraduate students master fundamental computer science concepts.

Neal Kumar, CFA

At Cognitir, Neal leads strategy and business development initiatives and advises on new product development.

Outside of Cognitir, Neal consults C-level teams and senior business managers on a variety of strategic topics ranging from M&A to marketing. He also leads training seminars for Wall Street Prep and has consistently received top reviews from attendees and created two training courses that were used in seminars worldwide. Before his consulting and training careers, Neal taught secondary mathematics in St. Louis Public Schools (USA) as a Teach for America Corps Member. Prior to joining Teach For America, Neal worked in investment banking at Lazard, JPMorgan, and Houlihan Lokey.

Neal received his MBA from London Business School (UK) and BBA in Finance from the University of Notre Dame (USA). He is also a CFA Charterholder and a Member of the CFA Institute Education Advisory Committee (EAC) Working Body where he helps shape CFA Program Content.

James LoBuono

James LoBuono is currently an Assistant Vice President at ConnectOne Bank where he assists in the management and origination of numerous commercial real estate mortgage transactions with a focus on the New York and New Jersey metro markets. Prior to this position, James was an associate at Chafia Capital Partners, a Northern New Jersey based private equity and real estate investment fund. James began his career working in the investment banking division at JP Morgan Chase within the bank's Syndicated and Leveraged Finance group based in New York. At JP Morgan, James also completed the firm's investment banking training program with an emphasis in financial modeling, corporate finance and valuation.

James received a Bachelor's degree with cum laude honors from Fairfield University in which he studied finance and business. He has over a decade of experience in analyzing and investing in both commercial real estate and startup opportunities. James also personally invests in blockchain and cryptocurrency related assets regularly and is currently leading Cognitir's blockchain learning group initiatives.