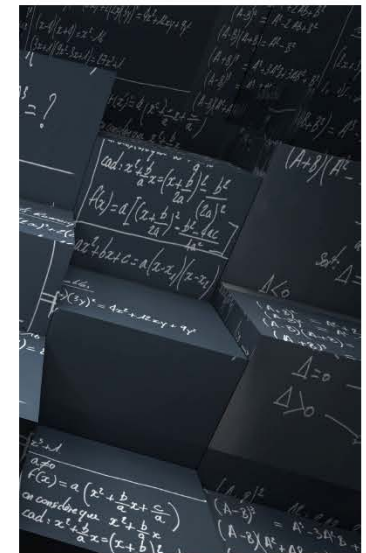
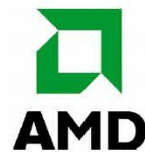
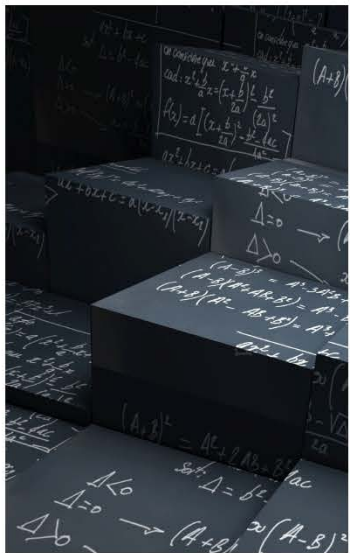


Women in Financial Mathematics

2nd National Conference



Tanya Beder, Rosemary Macedo & Monique Miller - Industry Day Organizers - April 27, 2017
Xin Guo, Thaleia Zariphopoulou – Academic Day Organizers – April 28, 2017
IPAM, UCLA, Los Angeles



- National math institute at UCLA, sponsored by NSF and started in 2000.
- IPAM's mission is to promote interactions between math and other disciplines
- Carried out through events ranging from 1 day to 3 months with over 1200 participants each year
- The next two days: math and finance...

...and...

Institute for Pure & Applied Mathematics

An NSF Math Institute at UCLA

math changes everything.

Connecting the Past with the Future of Financial Mathematics



Women in Financial Mathematics

Thematic Areas -2nd WFM

The Here-to-Stay Roles of Big Data and Machine Learning

Predictions for FinTech & Asset Management

Predictions for Portfolios and the Role of Robo Advisors

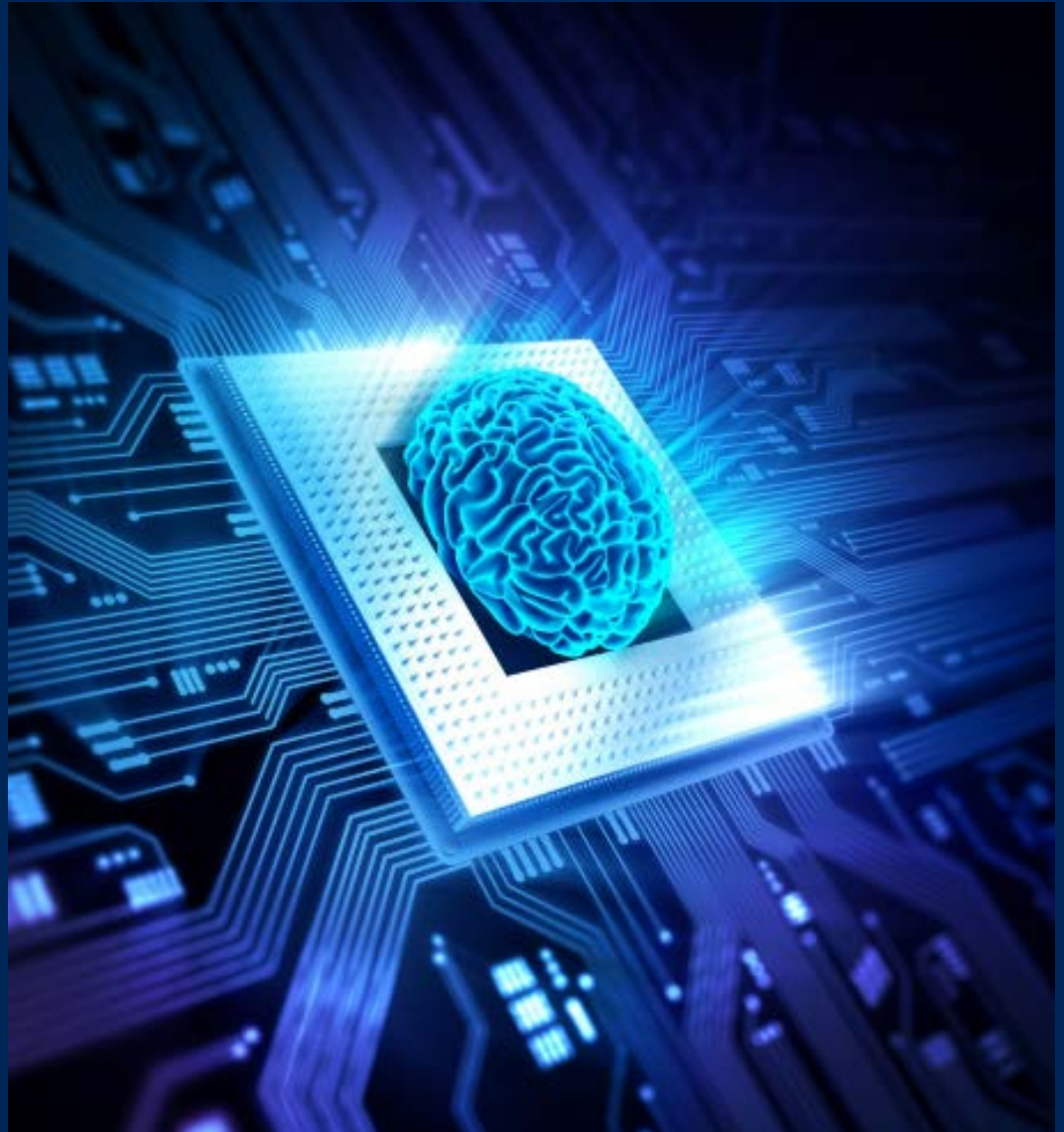
-- Luncheon Peer-to-Peer Topics --

The Outlook for Quantitative Investing

New Directions in Financial Mathematics – Risk/Algorithmic Trading/ ETFs and Beyond

Final Q&A

-- Reception --



Women in Financial Mathematics



1st National Conference
May 14, 2015

Thematic Areas – 1st WFM

Quantitative Trading

Predictions for FinTech & Asset
Management

Portfolio Allocation

Mathematical Finance
Communication Tips

-- Luncheon Peer-to-Peer Topics --

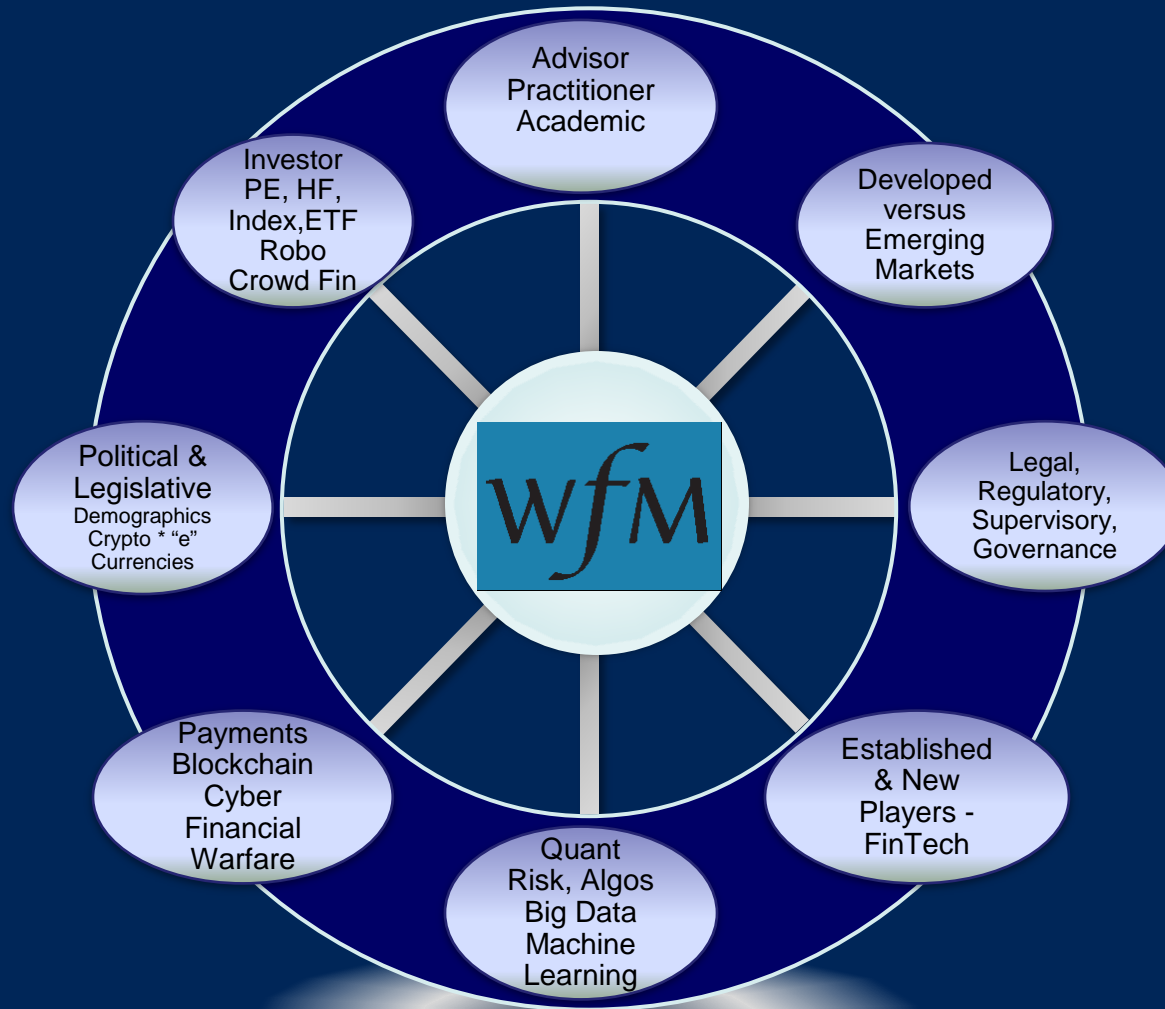
Data Analytics

New Directions in Financial
Mathematics – FinTech, Cyber,
ETFs, Systemic Risk and Beyond

Final Q&A

-- Reception --

Panelist Perspectives*



* Incomplete Listing

Questions About the Past, Present & Future: HOW?

- How will finance embrace big data and machine learning?
- How will new techniques for structured and unstructured data impact finance?
- How should we think about the past 10 years of data?
- How will traditional players transform themselves and will they collaborate or compete with FinTech?
- How might disruptive players have an advantage?
- How will regulatory change and fee pressure impact development of robo advisors, algorithmic trading, ETFs?
- How fast will current techniques become outdated?

Questions About the Past, Present & Future: WHAT?

- What predictions do we have about the future of finance?
- What new quant techniques are the hottest trends?
- What new techniques offer the greatest job opportunities?
- What advantages do disruptive players have?
- What key risks and opportunities exist?
- What changes will be driven by which stakeholders – retail investors, institutional investors, borrowers, service providers, over-seers, others?

Questions About the Past, Present & Future: **WHERE?**

- Where will we see the greatest practitioner developments in financial mathematics?
 - Emerging or developed markets?
 - Traditional or new players?
 - Front/middle/back office?
- Where will the businesses of quant asset managers, active/passive asset managers, data scientists, algorithmic and machine learning experts, robo advisors & risk managers be in 2, 5 and 10 years?
- Where will crypto currencies and e currencies succeed (if anywhere)?

Questions About the Past, Present & Future: **WHEN?**

- When (if at all) will the intervention subside and will there be a game-changing impact?
- When (if at all) will passive dominate active investing?
- When (if at all) will demographics change retail v. institutional strategies and products?
- When will the greatest risks and opportunities appear?
- When (if at all) will robotics increase/decrease jobs in financial mathematics?
- When – and which stakeholders – will drive change?

Today's Global Financial Landscape

- Extraordinary intervention, regulation, concentration and unintended/unforeseen consequences of the financial bailouts.
- Increasing activity outside of “norms,” decreasing trading volume “seen.” Many “new” risk-return tools.
- Increasing nationalism, central banks less independent, unsustainable wealth distribution.
- Changing roles – Gold, Bitcoin/Crypto, Oil, SWF, FinTech, Traditional players, role of retail and institutional investors.
- Monetization of assets and liabilities varies by market.
- Cyber risk at the national, company, personal level
- Financial warfare an increasing threat.
- Defining the correct state space is difficult.

And So The
New World
(a very partial listing)



ROBO-ADVISORS & PERSONAL FINANCE



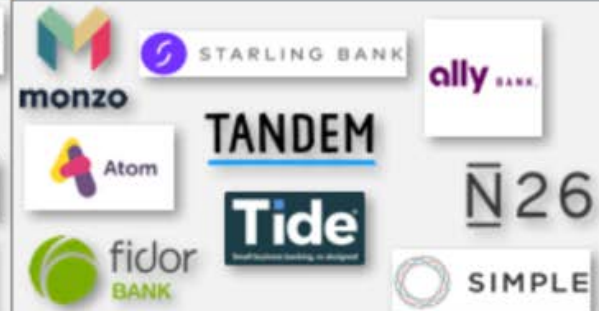
BLOCKCHAIN & BITCOIN



REGTECHS



DIGITAL BANKS



PAYMENTS & REMITTANCES



MACHINE INTELLIGENCE 3.0

ENTERPRISE INTELLIGENCE

VISUAL

Orbit Inghit Pihet
 delfi SPYVOK
 cartica SPINOR
 VIVO SHOW CIVILITY
 extra deepomatic

AUDIO

Gridspace TALKI
 socialize TWILIO
 CAPHO Expert Labs
 Clover HUBSPOT
 Databox JAZZ HANDBOOK

SENSOR

PREDIX Cyclo HANSHIN
 Sensoria PLANET OS
 LEPTAKE WISE TIGEST
 Pingsquare SICK AGENT

INTERNAL DATA

PROLIX INFORMATION
 Data Polaris ADAMO
 JAZZ Action Grapho Optifac
 DigitalPassing

MARKET

marketmark Qual
 Dataix PROMISE
 Business MOTIVA
 emglo HUBSPOT
 tracka predata

ENTERPRISE FUNCTIONS

CUSTOMER SUPPORT

DigitalGenius Kasisto
 ELOQUENT Wiseai
 ACTION Zendesk
 Proact ELARABIDGE

SALES

collective Gsense
 fuse@machines AVISO
 salesforce HUBSPOT
 clarifai clari
 Cloudfare

MARKETING

Hermes Lattice RADICAL
 Aliphate PERSADO
 Brightline Intertec
 Dimension Avance Qmoo

SECURITY

CYCLANCE SARKINCE
 Zimperium Inceptant
 Sentinel DEMISTO
 graphistry drawbridge
 Synapse Appfence

RECRUITING

textio emade
 white & weeds hi2
 undivide SpringRole
 GIGSTER fire76

AUTONOMOUS SYSTEMS

GROUND NAVIGATION

drive.ai AdactWorks
 ZOOK Measure
 RIBBIT Graph Tralla
 Pathmity Auto Robots

AERIAL

SKYDIO SHIELD AI
 Airware CFI LILY
 DroneDeploy
 pilon.ai SKYWATCH

INDUSTRIAL

JAYBRIDGE OSARO
 CLEARPATH fetch
 KINDRED
 AMBERZ rebus
 robotics

PERSONAL

amazon alexa
 Cortana ALO
 facebook
 Siri Replika

AGENTS

PROFESSIONAL

butler.ai POC SKIFFLAG
 clara x.ai slack
 tala Zoom sudo

INDUSTRIES

AGRICULTURE

BLUERIVER MAVIX
 tula TRACE P
 Green AGRIMARKS
 Precision Farming

EDUCATION

KREXTON volley
 gradscope
 CTI COURSE Hero
 JUBACITY school

INVESTMENT

Bloomberg Sentient
 SENTIUM KENSHC
 alpha sense Databerry
 Quant

LEGAL

blue J BEAGLE
 Everlaw RAVEL
 seal ROSS
 LEGAL ROBOT

LOGISTICS

NAUTO Aera
 PHRETOCK
 Routeific
 MARBLE PITSTOP

INDUSTRIES CONT'D

MATERIALS

Zymergen Citrine
 Eigen Innovations
 BRIGHT MACHINE
 PROTEUS HANDBOOK
 CALCULARIO

RETAIL FINANCE

TALA Anance
 Leads earned
 Affirm MBADOR
 wealthfront internet

PATIENT

PULSE CareVista
 ZEPHYRUS HEALTH
 CUREXION
 Alameda

IMAGE

Imvion SICAN
 ARTERYS enitic
 SENSELAB image
 Google DeepMind

BIOLOGICAL

Cartex color GRAL
 Deep Genomics education
 LUMINA
 Atomera unity 7/21

TECHNOLOGY STACK

AGENT ENABLERS

OCTANE.AI howdy Malubot MITT AI
 OpenAI Gym Kasisto autom8t
 semanticmachines

DATA SCIENCE

DOMINO SPYROVOKO rapidminer
 kaggle DataRobot that AYASDI
 dataiku seldon yscop big

MACHINE LEARNING

CognitiveScale GoogleML Dexters relevant
 Scale HyperScience NOFO apto mindai H2O AI
 SCALABLE REFERENCE sparkognition loop CROWDST
 deepsurio reactive skymind borsal

NATURAL LANGUAGE

ogolo RYLIEN LEXALYTICS
 Narrative Science spaCy LUMINO
 cortical.io MonkeyLearn

DEVELOPMENT

SIGOPT HyperOpt fuzzy pkite
 rainforest lobe Anodot
 Signal LAYER borsal

DATA CAPTURE

CrowdFlower diffbot CrowdAI Import
 Pavata DATASFT amazon machanicum enigma
 WorkFusion COMLOGIC TRIFACTA persehub

OPEN SOURCE LIBRARIES

Keras Chainer CNTK TensorFlow Caffe
 H2O DEEPLARNING4J theano torch
 DSSTNE scikit-learn AzureML neon
 MXNet DMTK Spark PaddlePaddle WEKA

HARDWARE

KNUPATH TENSTORRENT Cmscale
 NVIDIA NETVANA HUBBOX
 teraflica GoogleTPU 10 Labs ualcomyn
 Cerebras Isaacsim

RESEARCH

OpenAI Facebook ELEMENT viridius
 SHOGUN Neurontia Numer Systems Cogito

Signs the “model” may be changing

- The new shadow banking (e.g. Upstart, “liquid” alts, direct repo)
- The new trading systems (e.g. Big Data driven, new algos)
- The “new” securitization – Connecticut Avenue Securities (FNMA), Structured Agency Credit Risk (FHLMC)
- The “new” financial engineering (e.g. ETFs)
- The new crypto currencies (e.g. Bitcoin)
- The new banking ops (M-Pesa, Apple Pay, Alipay, Tencent, etc.)
- The new enterprise intelligence
- The new regulations (from higher capital to derivatives exchanges)
- The new opportunities from problems & related questions – bad behavior or bad economic systems or economic forces?

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The only bad questions are those not asked!