

# Jules A. Yasuna, PhD CFA

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## SUMMARY

### Functional

#### Finance

- Quantitative Development, Numerical Analysis
- Real-time Valuation, Trading Technologies, STP
- Portfolio Immunization, Hedge Accounting
- Fixed Income, Derivatives, Equities
- Murex, Findur, Asset Control, Summit, InvestOne
- Bloomberg, Reuters, Quantlib

#### Mathematics/Physics/Engineering

- Finite/Boundary Elements, Integral Equations
- Statistics, Regression, Optimization
- Computation Fluid Dynamics & Heat Transfer
- Microelectromechanical Systems, Biotechnology

#### Environments

- Hedge Funds, Insurance, Start-ups, R&D
- Individual contributor through Engineering V.P.

### Technical

#### Development Languages

- JAVA, MATLAB, C++, C#

#### Core Technologies

- Swing, JDBC, XML/XSLT, Java2D, Java3D

#### Distributed Technologies

- EJB, JMS, JMX, JNDI, Servlets/JSP
- JAXB/JAX-WS/JAX-RS/SOAP/REST
- RMI, JINI/JavaSpaces
- JavaScript, CSS, Dreamweaver, Flash, Illustrator

#### Databases/Containers

- Sybase, Oracle, SQL Server, MySQL
- JBoss, WebLogic, Glassfish, Tomcat

#### 3D Visualization & Animation

- OpenGL, VTK, MAYA, AVS/Express, Swift3D

## EXPERIENCE

**6/10 - present**      **John Hancock, Inc.**

**9/09 – 12/09**      **Consultant**

John Hancock is a subsidiary of Manulife Financial, a leading Canadian-based financial services group offering a diverse range of financial protection products and wealth management services.

#### Derivative Operations

*Designed and developed custom functionality within Findur.*

- Portfolio immunization, transfers and associated basis adjustments.
- Hedge accounting, assessment and effectiveness measurement for GAAP and IFRS.
- SQL Server and Sybase administration.

#### Trading & Portfolio Reporting Service

*Co-architected a reporting service for managing trading, portfolio and risk information from Findur.*

- Designed a multi-tiered reporting service for data extraction, translation and presentation.
- Implemented a proof-of-concept system using Informatica(ETL), Oracle(OLAP) and Business Objects/Crystal Reports.
- Enabled complex reporting aggregation through Web Services (JBoss/Jersey, Glassfish/Metro) layer.
- Developed example reports for portfolio valuation and credit/market risk..
- Delivered design specifications to be implemented by local and off-shore development teams.

**1/10 - 5/10**      **Bookus-Boulet, Inc.**

**Principal**

#### Trading Application

*Architected and implemented a consumer level trading application.*

- Developed a trading and valuation application for internal use and delivery as an open-source project.
- Supports multiple asset classes including Equities, Options, Bonds, CD's, Money Markets, Real Property, etc.
- Middleware & client components built entirely in JAVA, using a mix of EJB's, JavaSpaces and Swing.
- Quasi-real time pricing and analytics from multiple datasources.

Prepared for the Level 3 CFA Exam, 6/2010

5/01 - 6/09

**Harvard Management Company, Inc  
Consultant**

Harvard Management Company manages the University's endowment, pension assets, working capital and deferred giving accounts. My contributions included architecting and implementing multi-tiered front, middle & back office applications.

Financial Analytics & Trading Strategies Application

*Architected and implemented a fixed income investment strategy system. This application quantifies potential arbitrage scenarios, updated in real-time, across multiple domains and instruments using a myriad of analytic tools and methodologies.*

- Developed a quantitative analysis engine for calculating spot rates, stripped spreads, duration, convexity, cash flows, etc. Calculations update in real time from multiple pricing sources (i.e. Reuters, Bloomberg, etc.)
- Architected J2EE compliant business & persistence tiers for distributed transactional data access and work flow management. Instrumented and managed all middleware & back-end resources using JMX.
- Engineered a comprehensive Swing client for front office access. Designed a series of specialized components tailored to delivering a rich UI experience. This included custom table & tree controllers, custom renderers & editors, multiple 2D & 3D graphing widgets, and a complete inter/intra-application drag & drop framework with animated visual feedback. Integrated and coordinated multiple concurrent client instances using JMS and JMX.
- Developed a web client for back office access using Servlets, JSPs, custom tag libraries and filters. Implemented an applet to servlet tunneling layer using partially serialized XML payloads.

Portfolio Management & Valuation Application

*Architected and implemented a portfolio management and valuation system. This application coordinates instrument holding within multiple accounts and provides real time portfolio valuation and risk assessment.*

- Developed a comprehensive object model for trade related assets, cross-references, settlement instructions, etc.
- Architected J2EE compliant business & persistence tiers for distributed transactional data access and work flow management. Instrumented and managed all middleware & back-end resources using JMX.
- Engineered a comprehensive Swing client for front office access. Extended component library to include tables within trees, drag & drop to MS Excel, etc. Integrated and coordinated multiple concurrent client instances using JMS and JMX.

REPO Valuation & Collateral Management Application

*Architected and implemented a REPO and associated collateral valuation, reconciliation and exposure management system. This application is used to manage credit risk.*

- Developed a quantitative analysis system for REPO mark-to-market and bond collateral valuation.
- Manage counterparty margin calls, open REPO rate maintenance and collateral movement subsystems.
- Architected J2EE compliant business & persistence tiers for distributed transactional data access and work flow management. Instrumented and managed all middleware & back-end resources using JMX.
- Engineered a comprehensive Swing client for middle office access. Integrated and coordinated multiple concurrent client instances using JMS and JMX.
- Developed a web client for server task management using Servlets, JSPs, custom tag libraries and filters.

Interest Rate Derivatives Application

*Co-Designed and developed a pricing application for Swaps/Swaptions/Caps/Floor.*

- Engineered middleware components for persisting terms and conditions of multiple instrument aggregate trade strategies.
- Developed a rich Swing front-end, coordinating multiple concurrent client instances using JMS and JMX
- Integrated real-time feed for term-structure calculations, volatility surfaces, etc.

Security Cross Reference Service

*Architected and implemented a distributed system for common identifier conversion.*

- Integrated JINI/JavaSpaces with J2EE, providing robust template based lookup within a JMX container.
- Enable cross referencing between a myriad of symbols (e.g. CUSIP, ISIN, SEDOL, RIC, Bloomberg, etc.)
- Engineered a comprehensive Swing client and Java API for external system integration.

Miscellaneous

- Enhanced, modified and provisioned the organizations JBoss container under which all J2EE services are deployed.
- Architected and implemented an extensible XML & JMS based messaging library for application work flow integration.
- Designed and maintained a real-time library for streamlined access to Reuters SFC utilities.
- Engineered and developed an event & task based data flow application framework.
- Developed a numerical utilities library for curve fitting, root finding & statistical analysis.
- Developed a utility library for implementing RFC 959 File Transfer Protocol.

**4/00 - 5/01**      **Kurzweil Technologies, Inc**  
**Vice President of Engineering (hands-on)**

Kurzweil Technologies is an incubator specializing in areas such as financial market analysis & prediction, web portals for the medical community, artificial intelligence and computer generated art & poetry. My contributions included software architecting and engineering management.

Web Development

*Principal architect for all J2EE based middleware and backend software.*

- Architected and implemented a product development & defect tracking web application.
- Co-Developed a commercial web application for downloading & purchasing software products.
- Installed and administered IIS, WebLogic, Apache, Tomcat & JRun servers.
- Developed applets for animating 3D vector images.

Cybernetic Art Desktop Application Development

*Lead engineer for C++ and JAVA desktop applications development.*

- Architected and implemented a system of DLLs to wrap an existing legacy system(LISP) within an MFC framework.
- Developed a programmatic client-side HTTP library for uploading data directly to a web server.
- Integrated compression libraries into existing application framework
- Engineered custom licensing & installation DLLs for product download – US Patent 7389424.
- Developed Swing applications for parsing and displaying XML data & XSL translations.

System Development & Management

*Created and managed the software development process.*

- Installed and administered software configuration management tools.
- Developed a cross-platform automated build system.
- Wrote product requirement documents and implemented automatic technical documentation generation.
- Monitored and adjusted project schedule, milestones and deliverables.

3D Visualization

*Principle architect for scene graph design and development.*

- Designed a 3D scene graph API for rendering complex fractal based entities.
- Implemented the initial core class hierarchy and cross-platform development environment.

**3/96 - 4/00**      **Coventor Inc.**  
**Director of Engineering (hands-on)**

Coventor is a technology start-up developing CAD tools for designing micron-sized devices. Application areas include optical networking, wireless communications and biotechnology markets. My contributions ranged from personally delivering software components to growing and managing a staff of 23 software engineers & managers.

Software Development

*Individual contributor and/or principal developer in mission critical product segments.*

- Web – JAVA/perl software defect tracking database, internal web & news server.
- GUI – 100% JAVA/Swing implementation including specialized renderers, editors and event listeners.
- Client/Server – heterogeneous inter-process communication and scheduling software.
- Graphics – state-of-the-art 3D visualization and animation software.
- Environment – virtual build system, source code management and installation tools.
- Data Structures – self-describing platform independent persistent storage of complex data sets.
- Geometric Modeling – CAD/CAE tools for electronic & mechanical design automation (EDA, MDA).
- Engineering – multiphysics finite element (FEM) and boundary element (BEM) solvers.

Process & Personnel Management

*Staffed and managed computer science and engineering professionals through seven product releases.*

- Created a five-tiered software development process emphasizing strong communication of product goals both within the engineering team, and between development, sales and marketing. This included *Product Requirement Documents* for strategy at the release level, *Software Operating Requirements* for strategy at the individual project level, and *Weekly Action Items* for continuous monitoring and adjustment of the development process.
- Recruited, mentored and managed team of 23 engineers, project leaders and managers at two development sites.
- Instituted project management strategies and individual career development plans.
- Established and negotiated business agreements leading to several OEM relationships.

**6/95 - 3/96      *Advanced Visual Systems, Inc.*  
*Senior Visualization Engineer***

AVS is the industry leader for 3D visualization and animation software. My responsibilities centered on developing visualization components for deployment in the scientific, financial, GIS and telecommunications markets.

Software Development

*Individual contributor developing 3D visualization and animation software.*

- Coordinated engineering requirements for company's end-user product.
- Developed object oriented data visualization software components.
- Developed GUI for end-user product version.
- Created animation software for end-user and developer product versions.

Professional Services

*Technical marketing support engineering and customer training.*

- Instructed customers in visual programming development paradigm and strategies.
- Instructed on-site training and product development classes.
- Prepared demonstration applications for business partners and trade shows.
- Delivered pre-sales product demonstration applications.

**6/93 - 6/95      *Bettis Atomic Power Laboratory*  
*Senior Engineer***

Dedicated to the Naval Nuclear Propulsion Program, Bettis is a Department of Energy research facility engaged in the research, design, construction, operation, and maintenance of U.S. nuclear-powered warships

Software Development

*Lead engineer in the development of animation software for rapid visualization of complex 3D data sets.*

- Developed a suite of scientific data visualization tools for post-processing data from multiple software packages.
- Developed dynamic visual *Track & Steer* capability for interactive control between desktops and supercomputers.
- Developed software tools for animation and VCR presentations.

Mechanical Engineering R&D

*Task force member responsible for model and code development for the analysis of transient turbulent multiphase (gas-liquid) heated flow with phase change.*

- Cognizant engineer for turbulent flow code development and numerical analysis of computational physics solvers.
- Lecturer in turbulence modeling and code development.
- Continuous Improvement Award recipient and Westinghouse Signature Award nominee.

**9/92 - 6/93      *Carnegie Mellon University*  
*Post-doctoral Research Associate, Department of Chemical Engineering***

National Science Foundation funded research on the physics of fluid flow in oil refineries and chemical reactors.

Software Development

*Designed computational fluid dynamics (CFD) software for analyzing flow patterns with particle-particle interaction.*

- Implemented direct and iterative equation solvers.
- Increased existing software execution performance two orders of magnitude.
- Mentored graduate students in algorithm design and development.

Chemical Engineering R&D

*National Science Foundation funded research in the simulation of multiphase flow in risers and circulating fluidized beds*

- Modeled flow physics using methodologies based upon the *Kinetic Theory Analogy*.
- Simulated design conditions for oil and gas refining processes.
- Verified modeling results with comparisons to experimental data.

## **EDUCATION**

*PhD, Mechanical Engineering*  
Carnegie Mellon University, Pittsburgh, PA  
10 journal articles, & conference proceedings

*Managing Technical Professionals and Organizations*  
MIT Sloan School of Management, Boston, MA

## MISCELLANEOUS

### *Military*

Forward Observer, Bamberg, Germany  
2 Army Achievement Medals  
Good Conduct Medal  
Honorable Discharge

### *Professional*

National Science Foundation Funded Research  
Lockheed Graduate Fellowship  
National Mathematics Modeling Contest  
Sigma Xi, Tau Beta Pi, ASME

### *Volunteer Service*

Board of Trustees, Touchstone Community School(2004-8)  
Treasurer/Board of Directors, BJEP(2009-present)