

Founder and President C++ Software Engineer New York, NY I am an experienced, highly versatile, creative, and careful C and C++ software developer and an articulate communicator. I'm seeking a role that leverages my broad background to implement innovative solutions to challenging technological problems. I was a key developer of the first financial market data ticker feed, started one of the first ISPs in the world, created and implemented a new programming language, and have built entire operating systems from scratch. I am resourceful, curious, quick to learn, and have a talent for spotting limitations of an approach before they become design flaws. I'd like to work for a company where I can collaborate with and learn from other passionate people. Authorized to work in the US for any employer

Work Experience

Founder and President Rosenthal Discovery & Invention 2006 to Present Technology consulting, integration and software development with expertise in market data systems; multimedia, audio, video and still image processing; Internet based services and client/server TCP/IP software development; networking and telecommunications. Created first scalable, multi-screen, wirelessly synchronized, high definition media player: a self-contained embedded hardware/ software system designed to be integrated into complex public multimedia exhibits for unattended use (such as museum exhibits). It remains the only player capable of playing synchronized heterogeneous videos across a virtually unlimited number of autonomous units. Developed proprietary processing algorithms for integration into the firmware of digital cameras.

Software Developer / Architect AI Visual Search Leader 2017 to 2018 20-person accelerator-backed startup developing state-of-the-art AI based image recognition and visual search technology specializing in identifying fashion items and selecting visually similar products. [C++ and Python on Linux] My role included developing software for decoding, extracting and analyzing frames from video sources ranging from files to live streams as well as participating in architecting the pipeline between the artificial neural network and the higher-layers.

Software Developer / Architect DataCore Innovations, LLC 2016 to 2017 5-person financial startup. Worked with the founder, a distinguished mathematician, to implement his models for next generation "Smart Beta" indices. Collaborated on algorithms for analyzing data integrity, detecting and correcting anomalies and computing factors. [Python]

Software Developer / Architect Bloomberg L.P 2013 to 2015 For this financial software, data and media company with \$10 Billion in annual revenues, I developed, enhanced and supported Bloomberg Valuation Service (BVAL), their flagship fixed-income pricing system updating 2.5 million securities 9 times daily. Worked in the Core group providing the common software framework for all BVAL groups. [C, C++ and Python on AIX and Linux] Redesigned and implemented multithreaded replacements for slow single-threaded critical message passing components resulting in dramatic performance improvements. Designed and developed XML "differ" tool to regression test software releases. Large XML server request and response logs are semantically analyzed with user configurable reporting and highly flexible and accurate noise rejection. Designed and developed additional system analysis tools for identifying problems before they had an operational impact. Rewrote legacy C configuration API library in C++. This facility provides the group's applications with access to runtime parameters specified in XML configuration files.

Software Developer / Architect Royal Bank of Scotland 2010 to 2013 Designed, programmed and maintained systems in the Mortgage-Backed Securities (MBS) processing and allocations area. [C++, C, Perl, and Sybase SQL on Sun Solaris] ? Principal maintainer and point person for the EPN (FICC Electronic Pool Notification) messaging system. Rewrote key parts that allowed the system achieve 100% uptime. ? Designed system for maintaining agency pool data (such as factors, coupons, WALA, WAM, and dozens of other elements) in near real-time eliminating a complex and trouble prone batch process. Created a novel mechanism notifying other processes of updates.

President and Pioneer in a New Industry Walrus Internet 1994 to 2006 Founded, operated, and was the chief visionary and technical officer to one of the world's first Internet Service Providers (ISP), Walrus Internet, a contemporary of EarthLink, with thousands of customers and clients ranging from home users to large corporations including Revlon, Sprint, Pepsi, and KPMG. Architected the network, built datacenter, configured Internet servers and services, provisioned telecommunications services, and programmed custom applications. Walrus offered both connectivity (dialup, ISDN, DSL, T1, T3, Wide Area Ethernet over fiber) and services including email, website hosting, and colocation at its datacenter. Established and administrated server farm of Sun Sparc Solaris machines to provide public Internet services.

Software included: Apache webserver, Sendmail and Postfix SMTP servers, and Bind DNS server. Customized source code as needed. Created administrative tools in Perl, C, and C++. Configured and programmed network hardware and telecommunications equipment including routers, switches, terminal servers, firewalls, and load balancers. Expertise with TCP/IP and routing protocols, such as BGP4, on high-end Cisco routers. Defined security policies and successfully maintained a secure public network. Hands on projects for customers include: Developed and hosted the online presence of New York Road Runners / The New York City Marathon including ecommerce payment processing, the first live race runner tracking, server farm colocation, mass emailing systems, traffic analysis, capacity planning, systems optimization, and troubleshooting. Developed and hosted the image acquisition and processing system for the Miss Universe pageant which allowed the press/media to search and access pageant photographs as they were shot. Software Developer / Architect NatWest Markets Group 1994 to 1995 Invented an original programming language, compiler, and virtual machine. The language, "ML", functions as an integral part of a sophisticated derivatives trading system allowing users to describe instruments, graph behavior, design reports, and easily customize most aspects of the system. As of 2017, this language and my original code were still in production as a core component of trading systems and being used worldwide by various financial institutions. [C++ on SunOS] Senior Programmer / Analyst Lehman Brothers 1991 to 1994 A developer at the world's second largest investment bank on a state-of-the-art platform for collecting, processing and distributing fixed income market data from numerous providers to a global network of workstations. [C and C++ on SunOS] ? Conceived, architected and lead the implementation of the company's flagship data delivery product: an X-based market data presentation system, that, among many firsts, allowed traders design their own screens. a novel smart page shredder subsystem for accurately elementizing provider bond screens. ? Designed and developed event-based toolkits and code libraries. Organized team's development environment, established build and release control methods and initiated the migration from C to C++. Systems Architect / Project Manager Telekurs North America Inc 1986 to 1991 (continued to consult until 1995) A key developer of the first digital consolidated market data ticker plants - a large, fault

tolerant, distributed data collection, processing, and distribution system which consolidated real-time data from all electronic financial markets. It had extremely low latency, 100% uptime and did not drop messages even under market-crashing traffic conditions. Its patents were bought by Reuters years later. [Assembly language and C on Data General MV super-mini computers running AOS/VS]

Education Bachelor of Science degree in Computer Science in Computer Science State University of New York at Albany - Albany, NY Skills Linux (10+ years), Python (4 years), C++ (10+ years), C (10+ years), Assembly (10+ years), TCP/IP (10+ years), Routers (10+ years), Perl (10+ years), Market Data (10+ years), MBS (3 years), Unix (10+ years), Telecommunications, System Administration (10+ years), Programming (10+ years), Image Processing (10+ years), Trading Systems (10+ years), FinTech (10+ years), Multithreading (10+ years), Networking (10+ years), Equities (10+ years), Fixed Income (10+ years), SQL (5 years), SQL Server, XML Additional Information Skills Programming: Backend and Systems programming in C / C++, Perl, Python, Assembly / Machine Software Architecture and Design: ? Market data feeds and financial systems (equity and fixed income) ? Internet client/server software ? Systems automation and monitoring ? Writing API Libraries and APIs ? Standards, Codecs, Protocols, Hardware Additional Technologies: Unix / Linux, TCP/IP and other Networking and Routing Protocols, SQL, Telecommunications Protocols, Image Processing, HTML, XML, JSON. Media and Communications: Writing, Mentoring, Expert Photography, Photoshop, AfterEffects, Adobe Premier, LightRoom.

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