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Education

- **New York University, College of Arts and Science**, New York, NY — Sep 2006 - May 2010
  B.A., Computer Science and Mathematics
- **Stuyvesant High School**, New York, NY — Sep 2002 - Jun 2006

Work Experience

- **High Frequency Developer** — Mar 2011 - Present
  Two Sigma Investments (www.twosigma.com), New York, NY
- **Strategy Developer, Index/ETF Arbitrage** — May 2009 - Dec 2010
  Ronin Capital (www.ronin-capital.com), New York, NY

  Developed applications for pure, index, and statistical arbitrage in a distributed Linux/C++ environment. Was lead architect and developer of a low latency direct market access platform for high frequency trading that features sub-20 microsecond tick-to-release times including algorithm logic, risk, compliance, and message serialization. Utilized multiple threads, affinitization, and kernel/network bypass on SMP servers. Designed API for order server and trading applications. Designed and implemented messaging platform/API. Designed GUI toolkit for rapid prototyping of monitor and control applications. Responsibilities included leading a development team of three.
- **Intern, Software Engineering** — Jun - Aug 2008
  Arc90 (www.arc90.com), New York, NY

  Designed and built a scalable, high performance business rule evaluation engine to provide rapid risk evaluation for home insurance underwriters. Developed in Java/Groovy using Restlet and Hibernate.
- **Intern, Software Engineering** — May 2006 - Apr 2008
  ShopWiki (www.shopwiki.com), New York, NY

  Tracked and plotted ad clicks in Java/JSP. Designed and implemented a system to monitor and control dozens of servers in a data center.

Independent Projects

- **Waverly ATS** — Mar 2007 - May 2009
  An automated trading framework written in Java

  Developed an automated trading framework in Java from scratch, to research and trade automated strategies. Consists of more than 14,000 lines of code including an abstract exchange routing architecture and a FIX adapter based on QuickFix. Platform concept based on the commercial platform OpenQuant.

Computer Skills

Languages: Programming (strongest first): C, C++, Java, PHP, Perl, Python, R, Objective-C, BASH shell, Ruby, JavaScript, SQL, x86 Assembly. Display: (X)HTML, CSS, XML, LaTeX

APIs and Protocols: Facebook, PayPal, Cocoa Touch, FIX, NASDAQ ITCH/OUCH

Operating Systems: Linux, Open/Net/FreeBSD, Darwin/Mac OS X/iPhone OS, Windows

Applications: MySQL, Apache, SVN/CVS/git, x.org, LaTeX, Microsoft Office

Networking: IPv4 and IPv6, TCP, VPNs (openvpn, ipsec)

Security: In depth understanding of C and Assembly and the stack model, ability to write and detect buffer overflow exploits, solid understanding of the practice and theory of securing computers on a network

Miscellaneous: General UNIX system administration, building and customizing kernels for both BSD and Linux, TCP/IP networking, building and deploying custom router configurations with pf and iptables, strong verbal and written communications skills, contributions to the open source community