

# Jeffrey Freeman

## Curriculum Vitae

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*"Happiness does not come from doing easy work but from the afterglow of satisfaction that comes after the achievement of a difficult task that demanded our best." - Theodore Isaac Rubin*



Years of  
Overall  
Experience



Years of  
Public  
Speaking



Years of  
Management  
Experience



Maximum  
Team Size  
Managed



Positive  
References

### Computer skills

- Basic ASSEMBLY, DOCKER, L<sup>A</sup>T<sub>E</sub>X
- Intermediate AWT, BASH SCRIPT, C, C++, CSS, HTML5, JAVA NATIVE INTERFACE, JAVASERVER FACES, MICROSOFT WINDOWS, OAUTH, PYTHON, RUBY, SCALA, TOMCAT, DIGITAL SIGNAL PROCESSING, SAML, SWING
- Advanced APACHE JENA, ARTIFICIAL NEURAL NETWORKS, BAYESIAN NETWORKS, BIG DATA, DATABASES, CXF FRAMEWORK, ELASTICSEARCH, EVOLUTIONARY COMPUTING, GENETIC ALGORITHMS, GRAPH DATABASES, GRAPHICAL MODELS, GENETIC PROGRAMMING, HADOOP, HIBERNATE, HIDDEN MARKOV MODEL, INFERENCE ENGINES, J2EE, JAVA, JAVASCRIPT, JAXP, JDBC, JSP, LINUX, MACHINE LEARNING, MAP REDUCE, MARKOV CHAINS, MONGODB, MULTITHREADING, MS SQL, MYSQL, NAIVE CLASSIFIERS, NATURAL LANGUAGE PROCESSING, NOSQL, ORACLE DATABASE, POSTGRESQL, REGRESSION ANALYSIS, RDF, RESTFUL, SAX, SELF ORGANIZING MAPS, SEMANTIC COMPUTING, SOAP, SPIKING NEURAL NETWORKS, SPRING, SPRING BOOT, SPRING MVC, SQL, TINKERPOP, TITAN DATABASE, UML, XML

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## Experience

### Career

2002

2017

**Chief Technology Officer & Programmer**, SYNCLEUS, INC., Philadelphia, PA.

I founded the company in 2002 and acted as the Chief Technology Officer, **Java architect**, and **project lead** overseeing over a 60 projects and ensuring deadlines and requirements were met. The company specializes in **Big Data** and **Data Analytics**. Total team size as high as 40 staff of which 15 - 35 of them were developers at any given time, average staff size closer to 20 however. The team was largely **remote**, including **open-source contributors**, making for a unique work environment. Also took on a development role on many of the projects, particularly when a project was behind, or reached a difficult technological road block. A large portion of time was spent **mentoring** junior members and designing the **architecture** for new systems, as well as coding implementations. Worked heavily with standard and non-standard stacks including **Tomcat**, **Java**, **J2EE**, **Hibernate JPA**, **NoSQL Databases**, **MongoDB**, **TinkerPop**, **Hadoop**, **Apache Jena** and related technologies. Syncleus is a heavily **open-source** oriented company both consuming and producing **open-source** libraries as part of it's mission statement.

Development and design specifically focused on **artificial intelligence**, **big-data**, **graphical models**, **statistical analysis**, **regression analysis**, **distributed processing**, **multithreaded parallel processing**, **natural language processing**, **semantic computing & evolutionary computing**. **Unit testing**, **good coding practices**, and thorough **documentation** were high priorities on every project. Developed both traditional and novel technologies such as **Backprop Neural Networks**, **Self-organizing Maps**, **Bayesian Networks**, **State Vector Machines**, **Markov Chains**, **RDF**, **MapReduce**, **Hidden Markov Models**, and many others. There was also a great deal of focus on advanced mathematics such as **graph theory**, **linear algebra**, **statistics**, **vectors**, and **complex numbers**.

Experience included **full project life cycles** from design to production. Worked heavily with **PostgreSQL**; specifically **PL/SQL procedures and triggers**. Configuration files on several projects were read using the **Java SAX XML** library. Worked closely on **communication protocols** done via web-services such as **SOAP** and **RESTful** as well as low-level protocols such as **TCP** and **UDP**. Finally, **server and client** implementations utilizing various **Linux** flavors on the server side were common requirements. Also worked with **Mac OSX**, **Windows**, and **Linux** on the client side.

1997

2002

**Chief Technology Officer & Programmer**, SWAPOO, INC., Philadelphia, PA.

I founded this company in 1997 and acted as **Project lead** for a team of 2 other programmers. Published a **client-server** application, named Swapoo, a **file-sharing** program similar to Napster written in C++. Within the first week of publication we had over 32,000 hits per day as well as links on over 10,000 web sites with no cost to advertising. Responsibilities included acting as a **spokes person** for interviews in **over 30 national news reports** including **CNBC** twice, **front page of USA Today**, **Slashdot.org**, **CNET news** twice, **ZDNet**, **Fortune magazine**, **Business Week**, and **CNET Radio 910Am** San Francisco.

Worked to develop the precursor to the Swapoo **client-server** in **Java** as well as **multi-platform C++**, called RomNET. **MS SQL database** interfaced via **SQL** and **ODBC** to store user information. It implemented file-specific **compression algorithms** to greatly improve file transfer times. Established design procedures using **UML** and **unit tests** to improve stability. The system utilized **TCP** client-to-client and client-to-server protocols. The network and **search algorithms** were governed by **machine learning algorithms**.

### Consulting & Contracting

2015

2017

**Technical Lead & Programmer**, TREELINE INTERACTIVE, San Diego, CA.

Consultant and team lead focusing on **Java J2EE**, **Hibernate JPA**, and **CXF Frameworks**. Also acted as a **Big Data** Consultant across several projects, and authored several novel algorithms of the Graphical Model type for Treeline. Worked heavily with the **Elasticsearch** as part of the back-end, as well as **Spring** frameworks.

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2014  
2015 **Lead Programmer**, COMCAST, Philadelphia, PA.

Worked as a lead programmer on Comcast's new back-end providing TV and Movie metadata for their various services. I also worked on various components performing **Big Data** analysis. The database access was at first based on **Hibernate JPA** but I was in charge of moving most of that over to **NoSQL**, specifically **MongoDB**. The backend also used numerous technologies including **Elasticsearch**, and **RESTful** webservices. Spring frameworks were used heavily in particular **Spring boot**, and **Spring MVC**.

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2013  
2014 **Technical Lead & Programmer**, MCKESSON HEALTH SOLUTIONS, King of Prussia, PA.

Managed a team of 14 to develop Contract Manager, a contract authoring, contract repository, and contract negotiation suite. The product was built using **Java J2EE** technologies. The team consisted of developers, QA testers, and business analysts. Was responsible for overseeing product's **full life cycle** including requirements gathering, development, technology review, quality assurance, support, and release. Worked heavily administrating and mentoring for the **GIT** source repository including **migration from SVN**. Was responsible for all phone screening and face-to-face interviews. Worked heavily with implementing and integrating **Activiti workflow engine** as new functionality. Proposed and implemented **Apache Jena Semantic Web** technologies for managing metadata throughout the application. Contract Manager ran on **Oracle 10g** database server. Was also responsible for migrating from a **Torque ORM** to **Hibernate JPA** ORM. Also responsible for mentoring the team and conducting all **code reviews**. Hosted weekly classes on programming topics such as **Java collections**, **Java concurrency**, **Graph Theory**, **time complexities**, and many other topics. This position was a 6 month contract to hire, however I was unsatisfied with the company and choose not to continue with the company.

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2012  
2013 **Lead Programmer**, SIEMENS, Malvern, PA.

Worked on a **Linux** package management capable of installing, updating, and configuring packages once installed. Technologies used include **Java** and **Scala** programming languages, **REST** based communication using **Dropwizard**, and **Hibernate JPA** for the database abstraction layer. **Spring** fraeworks were used heavily throughout the stack.

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2006  
2007 **Software Architect & Programmer**, FEMA, Virginia.

Developed & Designed FEMA's most mission critical application called ADD, Automated Deployment Database. The purpose of the application was to manage the deployment of workers during a national disaster. The new software came from the aftermath of hurricane Katrina. At the core is a **decision engine** which suggested deployment schemes based on the conditions at hand. The project used **Oracle 92g** as the back end, and the **Ibatis** framework. Responsibilities included acting as senior developer on the project consisting of 5 other programmers as well as the being in charge of all **database** responsibilities, in particular writing all the **PL/SQL**. The front end used **Spring**, a **MVC framework**. The contract with the company was only for 3 months; Chose not to renew that contract.

2005  
2006

**Technical Lead & Programmer**, FREEWEBS, INC. (NOW WEBS, INC.), Silver Springs, MD.

This company was started by the old owners of WebOS, a previous employer. Primary responsibilities included design and implementation of **regression analysis** and **statistical analysis** software.

One role in particular was **project lead** for the internal and external usage statistics and analysis software. The system utilized a large collection of **machine learning algorithms** to compute vital information about its users. This information would generate suggestions to improve traffic into specific areas of the site and provide deep analysis of what influences a users decisions. The project used a **PostgreSQL** database and later moved to **Oracle database**. The system had to process over 4 million records per hour in real time and produce in-depth **statistics** on the data. The entire application was written in **Java** using a **J2EE** webapp to display the results. It included an administration tool, also developed using **J2EE**. The daemon portion of the tool, responsible for injecting the statistics into the database, used **XML (JAXP/SAX)** configuration files. **Java-script** and **DHTML** was also used extensively on the front-end. All of which required the **deployment and management of Tomcat**.

A supplementary role was as a **project lead** on a user survey system done in **Java** and **J2EE**. The system automatically generated surveys based on which questions in the database were most relevant to the individual. **Oracle** was used as the database back end.

2003  
2005

**Technical Lead & Programmer**, BOUNDLESS, LLC., Philadelphia, PA.

Worked on a **complete life-cycle** 2 year endeavor with 3 programmers to develop a **distributed network** that would efficiently exchange information needed for **genetic algorithms**. The final system was a **client-server network** written in **Java**, using a **MySQL** database and **SOAP communications**.

The most recent work was focused on **image compression** using **Artificial Neural Networks** and **Genetic Algorithms**. Our project resulted in a novel algorithm for lossy image compression that was better than JPEG. Responsibilities included acting as **lead programmer** on the project, which consisted of 5 other programmers and was written mostly in **Java** utilizing some **JNI**. **J2EE** with **tomcat** hosted the user interface for demos of the compression. Was tasked with **deploying and maintaining** the **Tomcat** server.

2001  
2003

**Software & Hardware Engineer**, U.S. DEPARTMENT OF HOMELAND SECURITY, MD.

Worked as a hardware and software engineer implementing a device for **microwave analysis**, the CS-3001. Primary responsibility was to implement the **Java swing** graphical interface via an applet hosted on the on board hardware, as well as control the hardware's registers. We implemented the **digital hardware designs** in **VHDL** for the on board **FPGA**. The analog components were developed by another team, however our designs had to control and interact with the **microwave receiver**. Technologies included **signal processing**, **Cooley-Tukey Fast Fourier Transforms**, **graphing and visualization** using **swing** components. As well as experimental components such as **machine learning** algorithms to detect hidden signals in the noise floor.

2000  
2001

**Sr. Software Engineer**, WEBOS, INC., Columbia, MD.

Lead programmer of Programming.com's **client-server** network using **Oracle database** for the back end. Communication was **encrypted** using a number of **public/private key algorithms**. It was written in **Java**. **UML** was used to design before writing code. It contained a user friendly **AWT GUI**. Also included a critical error **phone notification system**; in case of a system crash it would dial a network of phones and send out E-mail notifications.

Responsibilities also included developing Programming.com's **HTML** front-end. It utilized a newsletter sign-up form, a counter to record user info, and an online **secure** newsletter publication tool all done in **J2EE**. A submission interface allowed recommended links to be automatically submitted and approved.

## Volunteering

2009  
2013

**Tutor**, *Advanced Math & Computer Engineering*.

Volunteer in my spare time tutoring college graduates in advanced math, computer science, and electrical engineering.

2009  
2010

## **FIRST Competition, Electrical, Mechanical, and Computer Engineering.**

Volunteer assisting high school students in the FIRST robotics competition (For Inspiration and Recognition of Science and Technology).

## Public Speaking

- 2013 Live Web-casts on Artificial Intelligence and Evolutionary Algorithms
- 2012 Oral Presentation at the Free and Open Source Software Convention (FOSSCON)
- 2011 Oral Presentation at the Fifth IEEE International Conference on Semantic Computing
- 2007 - 2009 Lecture Series at Temple University Department of Computer science
- 2004 - 2006 Lecture Series at Drexel University Department of Computer Science
- 2002 Interview with Business Week Magazine.
- 2001 Live Radio Interview with CNET Radio 910 AM San Fransisco.
- 2001 Interview with Geek.com
- 2000 - 2001 Series of Live Interviews with CNET News
- 2000 Series of Live Interviews with CNBC News
- 2000 Live TV Interview with MSNBC news.
- 2000 Interview with Fortune Magazine.
- 2000 Front page interview with USA Today.

## Interests

- Organic Chemistry
- Cellular Biology
- Mathematics
- Neuroscience
- Electrical Engineering
- Amateur Radio
- Genetics

## Education

**Computer & Electrical Engineering, specializing in Machine Learning, Drexel University, Philadelphia.**

## Recomendations

- May 22, 2015 **Drew Morris, Board Member, Syncleus, Inc..**  
"Jeff Freeman is an extremely impressive individual. It is a given that he is a brilliant developer and software architect but he is also an innovator. He is one of the most forward-thinking people I know and he is constantly attempting to address the hard problems that few other people are thinking about. Working with Jeff is pleasant, rewarding, and often eye-opening."
- January 15, 2014 **Kurt Seidel, Business Analyst, McKesson Health Solutions.**  
"Jeff has a formidable intellect. He knows his stuff; he cares about quality code and optimization. Not only that- he is a nice guy and willing to share his knowledge. I would hire him for my start-up in a heart-beat!"
- July 26, 2013 **Lew Bloch, Java Developer, Syncleus, Inc..**  
"For a couple of years I worked with Jeff reviewing and commenting on his AI library dANN, and for several months worked side by side with him to get Syncleus off the ground and funded. We had worked together before, at WebOS and various ad hoc projects. His work on dANN is brilliant and hard to duplicate even knowing the code, and the first big practical project eliciting sales opportunities from car dealership records using his AI library created solid results. Jeff has a great blend of entrepreneurial vision and detailed software design and implementation skills."
- July 25, 2013 **Michael Griffith, Java Developer, Syncleus, Inc..**  
"One of the best programmers I've had the pleasure of working with, and a great teacher too. Very personable and an absolute genius!"
- June 3, 2013 **Seth Horne, Java Developer, Syncleus, Inc..**  
"Jeff has designed a mind-blowing array of unique software. Syncleus, the benevolent open-source oriented corporation that he founded, will soon unleash its technology and forever change our future."

- February 25, **Mark Buckman**, *Sr. IT Consultant*, Be2X Information Technology.  
2013 "Genius! Jeff is an amazingly clever engineer at crafting solid software solutions. After working nearly 2 decades in the IT industry, I've rarely met an individual with such a breadth of knowledge and technical expertise. Working with Jeff was a pleasurable experience on many levels, as he displayed a dedication not often found in this day and age. His structured and refined approach to problem solving is both a welcome refreshment and an invaluable asset to any technical project."
- March 20, **Shervin Pischevar**, *President*, Freewebs, Inc..  
2007 "Jeff is a technical genius. He is one of the smartest programmers that I have ever met. He is going to achieve great things."