

RANDALL P. "RANDY" BARLOW

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An accomplished Software Developer specializing in custom electromagnetic simulation software design with a strong background in Python and C++. Strong familiarity with the Finite Difference Time Domain (FDTD) simulation method as well as the Impedance Method. Experience in SQL, C, Java, PHP, and Matlab. Proficient in Linux, UNIX, OSX, Windows, Office tools, and CAD tools (Cadence, PSpice). Experience administering Apache, MySQL, Postfix, Courier, and Asterisk. Familiar with basic to advanced computer networking concepts. Seeking full-time employment as a Software Developer.

Education

NORTH CAROLINA STATE UNIVERSITY—Raleigh, NC

M.S. Electrical Engineering, August, 2009

GPA: 3.375

NORTH CAROLINA STATE UNIVERSITY—Raleigh, NC

B.S. Electrical Engineering, December, 2005

GPA: 3.977 (4.0 in major) *Summa Cum Laude*

Experience

2008 – Present

THE AMERICAN RESEARCH INSTITUTE—Morrisville, NC

Software Developer – Develops and maintains a powerful remote procedure call based software system, written primarily in Python, that is used to track and deliver content to support customer's learning objectives.

- Designed a highly complex authorization and security system that inspects every request, potentially denying the request or scrubbing read requests of any information that users are unauthorized to view. This authorization system is very flexible, with ACLs that extend to the model attribute level, and a rule system that allows arbitrary inspection of object relationships as well as user attributes to make the authorization decisions.
- Gathering of user stories to develop use cases to drive software design. This iterative work flow allows for an efficient and effective evolution of the software system from customers needs, to white board design, to testing, to final implementation and support.
- Developed a powerful and robust object oriented Python framework that has proven the value of reusable design patterns by its use in several custom software projects, greatly reducing development cost and time to deliver.
- Made efficient use of open source tools to quickly and inexpensively achieve customer goals. This included occasional modification of such tools when beneficial, exploring the full beauty of the open source software philosophy.
- Wrote a thorough suite of user story driven unit tests to ensure the highest quality of all software products. Committed to the concept that user story test case driven software design guarantees a product that meets or exceeds customer expectations.
- Serves as the lead developer on a small team of developers.
- Writes developer documentation to be used by front end designers.

2005 – 2008

NORTH CAROLINA STATE UNIVERSITY—Raleigh, NC

Research Assistant – Developed and maintained software, primarily written in C++ and Matlab, to be used in electromagnetic simulations, specifically:

- Creating software modules used to import computer models of 3D solids stored in the stereolithography file format.
- Developing FDTD simulator for use in calculating the input impedance, return loss, and radiation pattern for wireless systems to be used in biological simulations.
- Developing software that utilizes the impedance method to determine optimal designs for implantable medical devices, such as the artificial retinal prosthesis.
- Presented research at several conferences for the IEEE Antennas and Propagation Systems Society (APS) and the International Union of Radio Science (URSI).

2006

RPATH, INC.—Raleigh, NC

Linux Developer – Packaged and maintained hundreds of Java applications for the rPath Linux distribution.

- Maintained and contributed to several virtual appliances including a LAMP stack appliance as well as a simple Apache appliance.
- Wrote and maintained documentation for several rPath technologies, including how-to documents describing the use of rPath's packaging software, Conary.
- Contributed to the general development and upkeep of the rPath Linux distribution.
- Used Python to write recipes to package software for the distribution, as well as a handful of software appliances.

2004

CROSS COMM, INC.—Durham, NC

Web Programmer – Responsible for designing, developing, and documenting software both for clients and internal projects. Experiences include:

- Database design and development using MySQL as the backend.
- Using the Apache Tomcat server together with JSPs and Java to create interactive web pages.
- Worked with XML, XSL, and XSLT to store and style data for use in a web environment.
- Built several modules that added functionality to Cross Comm's content management system.

2004

NORTEL NETWORKS—Research Triangle Park, NC

Database Developer – Developed a powerful project tracking tool for internal use in the company, and in the process gained very valuable PHP and MySQL development skills in this Co-Op position:

- Implemented a backend database using MySQL.
- Built a powerful web based (PHP) front end system for users to interact with the database.
- Developed a tool for project owners to edit their own projects.
- Created several report-generating tools to return information about overdue projects, upcoming milestones, projects by owner, etc.
- Created several database administrative tools.
- Implemented user-level security with guest, view-only, project owner, administrative, and super user permission levels. Used PHP's session functions to manage the user log on, and maintained the user passwords and permissions in the local database.

Skills

- **Operating Systems:** Linux (Gentoo, Debian, and Ubuntu), Mac OSX, UNIX (Solaris), and Windows 98/2000/XP/Vista
- **Computer Languages:**
 - Proficient in C, C++, Python, Django, PyAMF, WSGI, HTML, XML, Java, \LaTeX , Matlab, and BASIC
 - Familiar with SQL, PHP, JSP, and XSLT, SOAP, AMF, XML-RPC
- **Tools and Systems:**
 - Proficient in Vim, MySQL, Subversion, Eclipse, PyDev, Trac, Apache, SSHD, Postfix, Courier, and Office Tools
 - Familiar with Samba, CVS, Asterisk, Cadence, PSpice, GNU AutoTools, VmWare, Xen, and Qemu

Course Work

- **Graduate Course Work:** Computer and Network Security, Organic Electronics, Analog Integrated Electronics, Artificial Neural Networks, Computer Networking, Mathematical Modeling of Biological Systems, Electromagnetic Fields, Photonics
- **Undergraduate Course Work:** Analog Integrated Electronics, Mechatronics, Control Systems, Advanced Microprocessor Systems Design, Communications Engineering, Microelectronics, Design of Complex Digital Systems, Electromagnetic Fields, Linear Systems, Digital Design, Electric Circuits