

## Résumé for Jeff Terrell, Ph.D.

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Attitude affects aptitude; principles power productivity.

CONTACT INFORMATION 4018 Summer Lane  
Hillsborough, NC 27278

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RECOMMENDATION (From client Lindsay Morris, CEO of TSMworks, Inc.): Jeff came up to speed quickly on a complex environment, completed some projects that had languished for months before he arrived, and has steadily made life better for me as product designer, and for our customers who need support. He's a pleasure to work with.

(From client Peter Nixey, YC S07 alumnus, then CEO and founder of HiringBuddy.com): Jeff has all of the characteristics that one could look or hope for in a developer. Most valuable of all are his excellent communication skills and his diligence: he documents his work well, keeps to meetings and is extremely good at articulating both progress and challenges. As a developer he is highly intelligent, calm, reliable, diligent hard working and honest. If he doesn't know something he will quickly and efficiently come up to speed on it and has good self-awareness about what time he spends developing and what time he spends learning. I thoroughly recommend working with Jeff and have very much enjoyed our interactions.

SEEKING POSITION Freelance programmer

SUMMARY I am a versatile programmer with a deep bag of tricks and an eye towards beautiful, maintainable code. I learn quickly and communicate well; I am disciplined and responsible; and I will be the sort of freelance programmer you would hire again and again.

EDUCATION **University of North Carolina, Computer Science Department**  
Ph.D. Computer Science, Advisor: Kevin Jeffay, August 2009  
M.S. Computer Science, Advisor: Kevin Jeffay, May 2007  
**University of Arkansas, Computer Science and Engineering Department**  
B.E. Computer Engineering (math minor), *summa cum laude*, May 2004

TECHNICAL SKILLS

- Programming languages:
  - Highly fluent in: Clojure, Clojurescript, Javascript, Ruby (including Rails)
  - Fluent in: perl, C, bash, SQL
  - Experienced with: Elm, Python, Scheme, Matlab/Octave, PHP, Java
- Other:
  - Elite skill level:
    - Linux/FreeBSD/Unix command-line interface
    - Vim and Emacs/Spacemacs text editors
    - Git for code revision control among teams
    - Functional programming
  - Expert skill level:
    - HTTP, HTML5, CSS, the DOM, and other web APIs
    - React.js, Redux.js, React Native, and functional reactive programming
    - Amazon Web Services, especially CloudFormation for infrastructure orchestration
    - API design and implementation
    - Test-driven development and agile methodologies

- Statistical and data analysis (including large data sets)
- Data visualization (especially interactive visualizations)
- Project management and technical leadership of development teams
- TCP/IP protocols, especially TCP
- Org-mode in Emacs (for personal organization)
- Database management and data schema modeling in PostgreSQL and Datomic

PROFESSIONAL  
EXPERIENCE  
(SELECTED)

**RoleModel Software**, Holly Springs, NC

*Software Craftsman*

Oct. 2016 – present

- Billed at high professional rates to build and support web applications for well-known companies.
- Used state of the art tools and techniques for web applications.
- Initiated and led task force to overhaul company's use of git.
- Established the "DevOps Guild" to improve Dev/Ops integration and code delivery processes.
- Worked with a colleague to establish the company's first mobile app strategy, including a decision framework for which mobile framework to use on a project.
- Met with one colleague weekly to mentor and grow him.

**Altometrics, Inc.**, Durham, NC

*Co-founder and Chief Technology Officer*

Jan. 2012 – Sep. 2016

- Evaluated existing and emergent technologies.
- Established shared cultural values (including elegance, excellence, helpfulness, and honesty).
- Worked with executive team to set direction and order priorities.
- Managed small team of developers, setting goals and tracking progress.
- Understood client needs, architected software systems, and estimated effort.
- Architected and delivered multiple web applications, data analyses, and other projects.
- Oversaw development, beta testing, and final delivery of an iOS and Android native map-based mobile application.

**Self-employed**, Chapel Hill and Durham, NC

*Freelance Web Programmer*

sporadically from 2005 – present

- Web server programming in Ruby on Rails and Clojure.
- Web frontend programming in Javascript and Clojurescript.
- Data analytics in Clojure, including using the map-reduce paradigm.
- Advised clients on technical matters.
- Consistently praised for skill, speed, and communication.

**Wal-Mart Informations System Division**, Bentonville, AR

*Engineering Intern*

summer 2003 and summer 2004

- Created web pages to mine, display, and correlate systems data from Informix database.
- Carefully determined the most useful ways to display information to users.
- Played integral role in determining which systems among the Wal-Mart enterprise were most in need of an upgrade, thus influencing how millions of dollars were spent.

FORMAL  
TEACHING  
EXPERIENCE

**Programming Language Concepts (COMP 524)**

*Instructor*

Spring, 2008

- Fully responsible for course, including curriculum planning, lecturing, homework, exams, grading, and well-attended office hours. All course material, including lecture notes, is available upon request.
- 13 of 15 students in the course completed an anonymous, standardized, end-of-course evaluation of 22 multiple-choice questions. I averaged 4.54 out of 5 points. Six students answered "yes" to the following prompt: **"The instructor was one of the best I have had at UNC, fully deserving of a teaching award."**

COLLOQUIA &  
CONFERENCE  
PRESENTATIONS

- Effects; or, how I learned to stop worrying and love functional programming. RoleModel colloquium. Apr. 2018.
- AWS Fargate: An Experience Report. RoleModel colloquium. Apr. 2018.
- A Vision for DevOps. RoleModel colloquium. Mar. 2018.
- Clojure and Datomic for Decision Support Systems: An Experience Report. RoleModel colloquium. Feb. 2018.
- Advanced command-line tips. RoleModel colloquium. Oct. 2017.
- A few tips for writing macros. Clojure/Conj 2017 (lightning talk). Oct. 2017.
- Enhancing your focus with Org-mode. RoleModel colloquium. Sep. 2017.
- Clojure for Rubyists: accessing the GitHub API. The Triangle Ruby Brigade meetup. Aug. 2017.
- An Overview of CRISPR. RoleModel colloquium. Jul. 2017.
- Recent changes to company best practices for `git`. RoleModel colloquium. May 2017.
- Personal branding: why and how. RoleModel colloquium. Mar. 2017.
- [redacted] Core Project Presentation. RoleModel colloquium. Jan. 2017.
- Using Magit (a front-end to `git`). RoleModel colloquium. Dec. 2016.
- An Overview of the Spacemacs editor. RoleModel colloquium. Oct. 2016.
- Clojure Macros: A Tutorial. TriClojure Meetup. Aug. 2016.
- Why and How to do a Software Startup. Carolina Innovations Seminar Series. Jan. 2015.
- Why learn programming? An entrepreneur's perspective. Guest lecture for Intro to Programming course. Nov. 2014.
- Transition from Grad School to Start-Up Company: Perspectives from UNC Alumni. Carolina Innovations Seminar Series. Oct. 2011.
- Building a Bridge to the Cloud. Renaissance Computing Institute. Sep. 2010.
- Managing the Performance of Servers in a Large Network, on the Cheap. Bar Camp RDU. Aug. 2009.
- Managing Server Performance (The Lesson of John Henry). Roanoke College MCSP Conversation Series. Jan. 2009.
- Exposing Server Performance to Network Managers through Passive Network Measurements. Internet Network Management Workshop (INM). Oct. 2008.
- Using `perl` on the command line. Programming Practices (group). Nov. 2007.
- Passive, source-level network measurement. CAIDA seminar. Jun. 2007.
- Increasing your productivity using the command-line interface. Systems Tea (seminar). Jan. 2007.
- Streaming algorithms for network scan detection. Systems Tea. Sep. 2006.
- Multivariate SVD Analyses for Network Anomaly Detection. ACM SIGCOMM Poster Session. Aug. 2005.
- Secure tunnels with `ssh`. WWW/Internet Interest Group. Mar. 2004.
- Using the Linux command-line interface. WWW/Internet Interest Group. Feb. 2004.
- The Hyper-Text Transfer Protocol. WWW/Internet Interest Group. Nov. 2003.
- Cascading Style Sheets: a Tutorial. WWW/Internet Interest Group. Sep. 2003.

INFORMAL  
PUBLICATIONS

- A Vision for DevOps. RoleModel company blog. Currently in review. Expected June, 2018.
- Using Docker in Heroku: Understanding the Tradeoffs. RoleModel company blog. Currently in review. Expected May, 2018.
- Enhancing your focus with OrgMode. Video. Available online: [\(link\)](#). September, 2017.
- Clojure for Rubyists: accessing the GitHub API. Video. Available online: [\(link\)](#). August, 2017.
- The divide-and-conquer strategy applied to writing blog posts: A guide for linear thinkers. RoleModel company blog. Available online: [\(link\)](#). June, 2016.
- Docker's dirty little secret. Altometrics company blog. Available online: [\(link\)](#). June, 2016.
- Histograms: an anti-rationale. Altometrics company blog. Available online: [\(link\)](#). May, 2016.
- A few tips for writing macros in Clojure. Altometrics company blog. Available online: [\(link\)](#). April, 2016.
- The benefits of writing a separate test suite for your app. Altometrics company blog. Available online: [\(link\)](#). March, 2016.

- Time Series Exploration. Altometrics company blog. Available online: (link). November, 2015.
- Reducing the conceptual load of reduce. Altometrics company blog. Available online: (link). July, 2015.
- Mapping will to keystrokes: an experiment in the Colemak keyboard layout. Altometrics company blog. Available online: (link). March, 2015.
- Lazy reduce in Clojure. Altometrics company blog. Available online: (link). February, 2015.
- Analyzing Reddit Submission Times. Altometrics company blog. Available online: (link). September, 2014.
- Dynamic Thresholding Tool. Altometrics company blog. Available online: (link). September, 2014.
- Hearthstone and the World Cup. Altometrics company blog. Available online: (link). July, 2014.

## RESEARCH EXPERIENCE

### University of North Carolina, Chapel Hill, NC

#### *Research Assistant*

August 2006 – May 2007; August 2007 – August 2009

- Passively measured network server performance, compared it to the awareness of UNC network services staff, and created an automated performance alarm system. [8,9]
- Collected large dataset (10+ months, 5+ TB) of UNC server interactions. [9]
- Wrote **adudump** tool for passively inferring application requests, responses, and response times by observing TCP/IP packet headers. [9]
- Successfully defended Ph.D. dissertation titled “Passive, automatic detection of network server performance anomalies in large networks”. [10]

### The Cooperative Association of Internet Data Analysis, La Jolla, CA

#### *Research Intern*

May 2007 – August 2007

- Quantified the degree to which USCD traffic was routed symmetrically to and from its peers.
- Systematically debugged and validated the inference algorithms of the **adudump** tool.

### ICSI Center for Internet Research, Berkeley, CA

#### *Research Intern*

May 2006 – August 2006

- Worked with Vern Paxson and Mark Allman on a longitudinal study of network scans. [7]
- Mined twelve-year connection log of medium-sized network for network scans using sophisticated probabilistic algorithms.

### University of North Carolina, Chapel Hill, NC

#### *Research Assistant*

August 2004 – May 2006

- Applied principal components analysis (PCA) and the subspace method to network anomaly detection. [2,3,5]
- Investigated usefulness of the method on real, simulated, and synthetic network traffic, ultimately pinpointing the reason why PCA was not amenable to our problem. [3,5]

## GRANT

SBIR Phase I: Investigating the Feasibility of a Real-time Cloud Computing Application Performance Management Tool. Principal Investigator: Jeff Terrell. Awarded \$150,000 by the National Science Foundation for term starting January 1, 2011, and ending June 30, 2011.

## PATENT

Methods, systems, and computer program products for network server performance anomaly detection. Jeff Terrell, Kevin Jeffay, F. Donelson Smith, and Eli Broadhurst. US Patent 8,938,532. Granted January, 2015.

## FORMAL PUBLICATIONS

10. Passive, automatic detection of network server performance anomalies in large networks. Jeff Terrell. Ph.D. thesis at the University of North Carolina. August, 2009.
9. Passive, Streaming Inference of TCP Connection Structure for Network Server Management. Jeff Terrell, Kevin Jeffay, F. Donelson Smith, Jim Gogan, and Joni Keller. 1st International

Workshop on Traffic Monitoring and Analysis (TMA), May, 2009. Aachen, Germany.

8. Exposing Server Performance to Network Managers through Passive Network Measurements. Jeff Terrell, Kevin Jeffay, F. Donelson Smith, Jim Gogan, and Joni Keller. Internet Network Management Workshop (INM), October, 2008. Orlando, FL.
7. A Brief History of Scanning. Mark Allman, Vern Paxson, and Jeff Terrell. ACM Internet Measurement Conference (IMC), October, 2007. San Diego, CA, USA.
6. Modifying the FreeBSD 5.3 kernel for accurate and precise ping measurements. Jeff Terrell. Technical report, May, 2007.
5. How Realistic is the Tmix Workload Generator for Network Anomaly Detection? Jeff Terrell. Technical report, May, 2006.
4. Mining Stable Patterns in TCP Connections. Jeff Terrell. Technical report, May, 2006.
3. Investigation of Network Anomaly Detection with Principal Components Analysis. Jeff Terrell, Brian Begnoche, and Mike Henson. Technical report, December, 2005.
2. Multivariate SVD Analyses for Network Anomaly Detection. Jeff Terrell, Lingsong Zhang, Zhengyuan Zhu, Kevin Jeffay, Haipeng Shen, Andrew Nobel, and F. Donelson Smith. ACM SIGCOMM poster session, August, 2005. Philadelphia, PA.
1. A Survey of Theoretical Issues in Peer-to-Peer Systems. Jeff Terrell. Technical report, May, 2005.

SERVICE & LEADERSHIP	<b>Founder</b> , DevOps Guild, RoleModel Software	2017–2018
	<b>Chair</b> , Git Best Practices Task Force, RoleModel Software	2017
	<b>Member</b> , Website Redesign Committee, UNC-CS Department	2006–2007
	<b>President</b> , Computer Science Student Association (CSSA) at UNC	2006–2007
	<b>Vice President</b> , CSSA	2005–2006
	<b>Colab Administrator</b> , UNC Computer Science Dept.	2005–2006
	<b>Fundraising Coordinator</b> of Wal-Mart Interns	2004
	<b>President</b> , WWW/Internet Interest Group (WIG) at the University of Arkansas	2003–2004
	<b>Vice President</b> , Yocum Residence Hall at Univ. Ark.	2003–2004
	<b>Vice President</b> , Univ. Ark. ACM Chapter	2003–2004
	<b>Technology Chair</b> , SWACURH Conference '03	2003
	<b>Member</b> , Univ. Ark. Technology Committee	2002–2004
	<b>Treasurer</b> , Univ. Ark. ACM Chapter	2002–2003
	<b>Vice President</b> , WIG, Univ. Ark.	2001–2003
AWARDS	<b>Intern of the Summer</b> of 150 Wal-Mart Interns	2004
	<b>Governor's Distinguished Scholar</b> , State of Ark.	2000–2004
	<b>Chancellor's Scholar</b> , Univ. of Ark.	2000–2004
CLASS PROJECTS	Modifying the FreeBSD 5.3 Kernel for Accurate and Precise Ping Measurements	Spring 2007
	How Realistic is the Tmix Workload Generator for Network Anomaly Detection?	Spring 2006
	Mining Stable Patterns in TCP Connections	Spring 2006
	On the Effectiveness of PCA-based Network Anomaly Detection	Fall 2005
	A Survey of Peer-to-Peer Systems	Spring 2005
	TCP-friendly rate control (TFRC) implementation in Java (with Rohit Saboo)	Spring 2005
	Principal Components Anal. (PCA) for Net. Anom. Detection (w/ Lingsong Zhang)	Spring 2005
	DRIS: The Distributed and Robust Installation System (with Jeff Schoner)	Fall 2004