

Joshua B. Thorp

1007 Siringo Rondo E, Santa Fe, NM 87507

joshua@stigmergic.net

(505) 699-8467

Flexible programmer and creative problem solver. Experienced in web application development at all levels with recent experience in building scalable applications on cloud computing platforms. Extensive experience modeling and teaching about complex adaptive systems, human behavior in organizations, distributed systems design, machine vision applications, and designing scientific visualizations. Strong collaborative skills, working closely with colleagues and in-depth consulting with a broad range of clients as well as hiring and project managing contractors.

CAREER OVERVIEW

<i>Co-founder & CTO</i>	InboxFever	2011 to present
<i>Technical lead & Facilitator</i>	GUTS y Girls	2010 to 2011
<i>Independent Contractor</i>	Stigmergic Productions	2009 to 2011
<i>Software Developer & Facilitator</i>	Project GUTS	2007 to 2011
<i>Instructor</i>	Educational Programs	2008 to 2010
<i>Software Developer & Principal</i>	Redfish Group	2005 to 2007
<i>Consultant & Developer</i>	Independent Contractor	2002 to 2005
<i>Software Engineer</i>	BiosGroup Inc.	2000 to 2002

EDUCATION

2007 **Santa Fe Institute**, Santa Fe NM

Complex Systems Summer School

1999 **Cornell University**, *College of Engineering*, Ithaca NY

Bachelor of Science – Computer Science, concentration in Mathematics.

SKILLS

Languages: Proficient in Java, Python, JavaScript, Processing, HTML, XML, CSS, NetLogo. Familiarity with C/C++, ActionScript, LISP, Ruby, Objective C, PHP Interest in CoffeeScript;

Software Libraries/Frameworks: Django, jQuery, JDBC, Repast, GDAL, Shapelib, BeautifulSoup, processing as a Java library;

Development Environments: Eclipse, Netbeans, Xcode, Linux/GNU suite of tools including gcc, gdb, make, bash, screen, ssh, vim, etc.;

Software Engineering: git, svn, cvs, Perforce, JUnit;

Graphics: Blender, Photoshop, Illustrator, OpenGL;

Web Software: Apache Web Server, AJAX, MySQL, Drupal, puppet, nginx, unicorn, lighttpd, lamson;

Cloud Platforms: AWS (s3, ec2, rds), Google App Engine;

Mobile Platforms: Android Development, familiarity with IOS tools

EXPERIENCE

Co-founder & CTO **InboxFever** 2011 to present

Built a cloud scalable email parsing API for web applications on the AWS platform using the python Django web framework. The app is auto-scaled utilizing a puppet server configuration for spinning up new ec2 instances. Custom email apps were built for this platform using Google App Engine. Project managed the work of programming contractors, worked with design firms as well as accounting and legal services. Participated in the Boulder TechStars startup accelerator. Worked to raise venture capital.

Technical lead & Facilitator **GUTS y Girls** 2010 to 2011

Managed and customized a modern PHP/MySQL social network website for a NSF funded project studying the effects of a social network and monthly daylong workshops on the self-efficacy of middle school girls in the STEM field. Worked closely with lead researcher to tailor social network functionality to needs of the program to answer research questions. Compiled reports on the girl's activities on the site. Facilitated sessions to familiarize the girls with the site and other computer topics including basic programming, Agent Based Modeling and complexity science concepts.

Independent Contractor **Stigmergic Productions** 2009 to 2011

Project Summaries:

DEW (Digital Earth Watch), Android App. Built a citizen science application for the Digital Earth Watch PicturePost project supported by NASA. App takes photos in 8 directions from a fixed location and uploads them to a site. Posts can be viewed over time to explore questions about seasonal change.

Re-mindful, Ported a pre-existing IOS app to the android platform. The app was a random alarm clock that could be set to go off within a time range giving a random piece of wisdom to the user.

Bump, Android App. App takes accelerometer readings and uploads them to a server for crowd sourced algorithm challenge to discover potholes. App had a visual user interface and communicated with a back end server that was developed on the Google App Engine platform. Developed for the city of Boston, New Urban Mechanics.

San Francisco Youth Mental Health, Data visualization, Java/Processing. Created a visualization of youth in a mental health system, tracking as they went from one part of the system to another. Visualizations are interactive, using attraction to attribute nodes and geographic locations.

Software Developer & Facilitator **Project GUTS** 2007 to 2011

Developed educational software with a team at the MIT Scheller Teacher Education Program called StarLogo TNG. Developed other applets/models for instructional activities. Created curriculum for middle school students learning about Complex Adaptive Systems and Agent Based Modeling. Support of Drupal based website. Taught classes and workshops, both for students and teacher professional development.

Instructor **Educational Programs** 2006 to 2010

Taught annual summer workshops: ***New Mexico Super Computing Challenge Summer Teacher Institute*** (3 years), Teachers for the ***Santa Fe Institute Frontiers in Biological Research*** (2 years), High school students in the ***Santa Fe Institute Summer Internship Mentorship*** program (2 years). Presented agent based models and scientific visualization techniques to Grad students in the ***Santa Fe Institute Complex Systems Summer School*** (2 years). Topics taught included GIS, Agent Based Modeling, basic programming concepts in NetLogo and Java.

Software Developer & Principal **Redfish Group** 2005 to 2007*Project Summaries:*

Florida Youth Mental Health. Created an original agent based data viewer of youth passing through the Florida Mental health services. Work included spring layout graphs derived from cluster analysis and dendrogram analysis of 'state transition data'. The project allowed for multiple approaches to visualizing state transition data compiled originally for the derivation of a Markov model.

Global Sea-rise Visualization. Produced a series of kml/kmz image overlays on Google Earth that demonstrated the extent of flooding for coastal cities of the US given a particular level of sea rise.

Veezyon.com. Managed the production of a research video web application for editing research notes and searching for videos while viewing a video on the same page. Supervised an additional contractor and worked closely with the client.

Stadium Emergency Egress Model. Created an agent-based model of crowd evacuation under several scenarios, including a baseball stadium and a subway station, in the Processing Java framework. The Blender 3D modeling application was used to render movies of the resulting egress model.

Intel Internal Resource Network Visualization. Produced a novel visualization of engineering data for Intel Corporation. The visualization consisted of three different classes of entities; each constrained to a particular 3D space and connected to each other by springs resulting from relationships generated from a database of events.

Santa Fe Wildfire Evacuation Model. Modeled automobile traffic evacuation for neighborhoods of Santa Fe in the event of a wildfire. Model was implemented in Python utilizing GIS street and housing data from the city, fire model runs from a separate fire model named Farsite, and USGS elevation data. The model was animated in the Blender 3D environment.

Redfish Group Summer Intern Program – taught and supervised summer intern program (3 grad students). Topics included principals of agent based modeling and scientific visualization in the Processing.org environment.

Consultant & Developer **Independent Contractor** 2002 to 2005

Heroin Street Market Model. Collaborated with an ethnographer at the Washington University School of Medicine to model a heroin street market in Denver, CO.

Los Alamos Agent-Based Operational Risk Simulation. Created a graph viewer of social network structure in the Los Alamos Agent-Based Operational Risk Simulation (LABORS) project. These social network graph structures were built into the simulation from a MySQL database using the JDBC library and implemented in the Repast Java modeling environment. Developed an editor for general model parameters in multiple XML files for the Los Alamos Multi-Agent Simulation (LAMAS).

Decision Making in Business Landscape Model. Built model analyzing the value of a CEO making decisions in a NK model of business landscape in consultation with a researcher at Washington University in Saint Louis.

Software Engineer **BiosGroup Inc.** 2000 to 2002

Project Summaries:

Next Generation File Storage System. Performed as technical lead on research and development of a self-administrating, self-organizing file storage system for a major file storage company. Technologies explored included peer-to-peer file sharing, network simulation, and distributed resource allocation.

Initial Phase of Risk Model – Bank. Interviewed domain experts at a major Canadian bank to acquire the needed business process/social interactions to design a model of the Risk and Account Managers within the bank system.

Market and Business Risk Model – Energy Company. Developed an agent-based model of a major energy company for Market and Business Risk Model. Interviewed domain experts, developed a model of the Exploration and

Development business unit in concert with domain experts within the energy company and supported researchers in the analysis of the model.

Software QA. Facilitated project review and transition of code base from projects to code repository and served as internal quality assurance consultant to project teams. Projects included a Supply Chain Model and general Agent Based Modeling and Optimization components.

PUBLICATIONS

Samuelson, D., Parker, M., Zimmerman, A., Miller, L., Guerin, S., Thorp, J., and Densmore, O., (2007), "*Agent-Based Simulations of Mass Egress After an Improvised Explosive Device Attack*," European Conference on Complex Systems, Dresden, Germany.

Samuelson, D., Parker, M., Zimmerman, A., Guerin, S., Thorp J. and Densmore O., (2007), "*New Developments in Modeling Crowd Dynamics and Mass Egress*," featured tutorial, Fourth UCLA Conference on Human Complex Systems, Lake Arrowhead, Calif.

Thorp, J. and Guerin, S., Wimberly, F., Rossbach, M., Densmore, O., Agar, M., Roberts, D., (2006), "*Santa Fe on Fire: Agent-Based Modeling of Wildfire Evacuation Dynamics*", in Proceedings of the Agent 2006 Conference on Social Agents: Results and Prospects, ANL/DIS-06-7.

CONFERENCES, WORKSHOPS, EDUCATIONAL PROGRAMS

Defrag – presenter	2011
Glue Conference	2011
Computational Thinking Workshop	2011
Google IO	2010
Arrowhead Workshop – presenter	2007
Agent	2005

VOLUNTEER

New Mexico Supercomputing Challenge: Instructor at Kickoff, Mentor, Projects Expo Judge 2005-present

New Mexico Museum of Indians Art and Culture – Educational Events Volunteer 2007

Software/Hardware development: Built an early (2006-2007) multi-touch table and created software to control applications that provide tactile/visual relationships enabling active engagement with the computer modeled environment and agents.