

Christopher L. Simpkins

Computer Scientist

Education

- In Progress: Ph.D., Computer Science, Georgia Institute of Technology.
 - Advisor: Charles Isbell
 - Started August 2005.
- M.S. in Computer Science, Southern Polytechnic State University, 2004. GPA: 3.92/4.0.
- B.S., United States Air Force Academy, 1990.

Professional Experience

Research Scientist

Georgia Tech Research Institute, Atlanta, GA

November 2001 to present

As a computer scientist in Signature Technology Lab, conduct computing research and development and provide software engineering leadership. Effected radical positive change in the organization by restructuring software teams, creating common code libraries, redesigning existing software systems, and unifying development processes. These changes improved software quality and delivery schedules, reduced costs, and allowed us to create a team of student cooperative Computer Science majors to act as junior software engineers.

- Investigated use of genetically and MIMIC designed neural networks for the identification of RF emitter signals using WEKA and hand-coded algorithms in Lisp and Java.
- **Principal investigator** on internal research in information-theoretic machine learning and genetic algorithms for antenna design (using Lisp).
- **Chief architect** and **lead software engineer** for team of three software engineers developing a scientific data management and visualization application using Java, Swing and XML.
- **Principal investigator** on project developing standardized XML formats and translators (hand-coded and XSLT) for materials signature measurement data.
- **Chief Architect** and **lead software engineer** for team of 12 software engineers developing distributed applications and using Solaris, Linux, Oracle 9i, Java Swing, Tomcat 4, Servlets, JSP, and Struts framework.
- **Senior software engineer** on digital library web application using distributed, multi-tier Java technology and high-security software designs.

- Chief recruiter and technical screener of candidates for full-time research positions.
- Creator, leader, and mentor of group of cooperative Computer Science majors who serve as junior software developers in our group.

Software Engineer

Internet Security Systems, Atlanta, GA
August 2000 to November 2001

Key player in two software projects using Java enterprise technologies such as servlets, RMI, and JDBC. Each project employed eXtreme Programming methodology and multi-tier architectures.

- Hand picked to be one of three core engineers on company's most important forward-looking project, which grew to two teams of ten engineers each. As one of two **lead software engineer**s on UI/application server team, developed major portions of the design, set coding standards, established build procedures, and mentored other developers.
- On previous project - my first in the company - quickly earned a reputation for excellent programming and design skills. Received formal award from lead engineer for my decisive contributions to the usability and GUI design of the product. Chosen from among the 12 engineers on the team for important core position on new development team.

Software Engineer, IT Manager

USAF, Columbus Air Force Base, MS
May 1998 to August 2000

As **chief architect** and software engineer, performed requirements analysis, design, evaluated technology options, and implemented two enterprise systems. Convinced commanders to devote critical resources to implement my solutions, which became overwhelming successes.

- Designed and built mission critical flight management system which is heart of flight operations for two busy squadrons flying up to 200 flights per day. System consists of four front-end applications written with Borland C++ Builder using VCL components, a back-end Interbase RDBMS server, and application logic written in ANSI C++ using the Standard Template Library. Tremendous personal initiative revolutionized flight operations, saving over 8000 person-hours per year and improving operational command and control by 100%.
- Designed, built, and administered dynamic intranet web site using PHP and HTML which serves as information hub used daily by 300 users.

As network/security administrator and IT manager, trained and led a team of three network and security administrators. We built, maintained, and supported a 100 node, 300 user LAN with two RAID-backed servers connected to a 1000 node base-wide LAN.

T-37 Instructor Pilot

USAF, Columbus AFB, MS
July 1997 to June 2000

Turned new Air Force officers into military jet pilots in USAF Primary Jet Pilot Training. Taught fundamentals, aerobatics, instrument flight in poor weather, and formation flying. Flew daily missions with young students in a dynamic, high stress flying environment regularly making critical real-time decisions and using expert judgement to achieve the best training and flight safety.

KC-135 Pilot

USAF, McConnell AFB, Wichita, KS

August 1995 - March 1997

Working closely with a highly skilled crew, executed hundreds of successful air refuelling missions in worldwide military operations. Received outstanding crew award while deployed in support of operation Southern Watch in Saudi Arabia. One of only two co-pilots in squadron selected for highly coveted special operations qualification.

Instructor and Software Engineer

US Undergraduate Space Training (UST), Lowry AFB, Denver, CO and Vandenberg AFB, Lompoc, CA

June 1992 - March 1995

Taught mechanics to students preparing for assignments as space operations officers. Every class I taught cited me as their best instructor. Achieved highest pass rate in all of UST while teaching its most difficult course. Developed in-house software in C for office and training applications.

Other Relevant Education and Training

- **USAF Instructor School, 1992:** Student lectures are videotaped for review and critique, then discarded. One of my lectures was kept as an example for future students to follow.
- **USAF Squadron Officer School, 1994:** Received written commendation for my presentation skills; cited for excellent performance in Leadership Reaction Course.

Publications

Conference Papers

- **Using Content Analysis to Investigate The Research Paths Chosen by Scientists Over Time.** Chiara Franzoni, Christopher Simpkins, Li Baoli and Ashwin Ram. *11th International Conference of the International Society for Scientometrics and Informetrics (ISSI 2007)*

Invited Talks

- **Artificial Intelligence Methods for Detection and Handling of Software Behavior Anomalies.** Presented at the DARPA Application Communities Proposers' Day Workshop, 16 Aug 2005

Research Proposals and Grants

Submitted as Lead or Co-Principal Investigator

- **Materials Analysis Tool (MAT) Version 2**
 - Solicitation: Invitation of James Feagan, MSIC
 - Sponsor: MSIC
 - Investigators: Christopher Simpkins

- Amount: \$200K
- Submitted: August 2005 (funding has been promised but not yet identified)

Submitted as Key Team Member and Proposal Writer

Awarded as Lead or Co-Principal Investigator

- **Context Dependent Qualitative Models for Statistical Value of Information**

- Solicitation: Knowledge Discovery & Dissemination (KDD)
- Sponsor: ITIC
- Investigators: Charles Isbell and Christopher Simpkins *Note: White paper based on ideas of David Roberts, who contributed significantly to the white paper.*
- Amount: \$400K (2 years)
- Submitted: (Whitepaper) November 2006 *Note: white paper was accepted but the KDD program was cancelled before contract was funded*

- **IDMATS**

- Solicitation: Sub Contract # ANSWER-SC-03-007 to Northrop Grumman Defense Mission Systems on contract GS09K99BHD0008
- Sponsor: NASIC
- Investigators: Michael Polovino and Christopher Simpkins
- Amount: \$100K
- Period of Performance: 26 Jan 2004 to 26 July 2004

- **Design Software for Large Scale Quantum Computation**

- Solicitation:
- Sponsor: ARDA, STIC, DTO, AFRL
- Investigators: John Cortese and Christopher Simpkins
- Amount: \$633K
- Submitted: February 2005
- Note: this proposal was not accepted by the government agencies to whom we submitted it, but Synopsis, Inc. offered to fund the project. GTRI declined due to contracting issues.

Awarded as Key Team Member and Proposal Writer

- **Anti-Tamper Validation and Verification Methodology Development**

- Solicitation: AFRL/SNTA SOW dated 20 May 2005
- Sponsor: AFRL
- Investigators: Bo Rotoloni
- Amount:
- Submitted: June 2006

- **Comparative analysis of threat and decoy systems**

- Solicitation: Sparta, Inc. contract MDA908-99-D-0004 subcontract 99-571-259

- Sponsor: MSIC
- Investigators: John W. Schultz
- Amount:
- Period of Performance: 30 Mar 2004 to 23 Jun 2005

Unfunded as Lead or Co-Principal Investigator

- **GAMBIT: Gaming and Modeling-Based Intelligence Technology**
 - Solicitation: BAA 07-01-IFKA “Proactive Intelligence (PAINT)”
 - Sponsor: DTO
 - Investigators: Christopher Simpkins and Ashwin Ram
 - Amount: \$4.5M (\$1M/year for 4.5 years)
 - Submitted: Whitepaper: December 2006; Proposal: February 2007
- **TISCE: Tacit Information Sharing and Collaboration Environment**
 - Solicitation: Knowledge Discovery & Dissemination (KDD)
 - Sponsor: ITIC
 - Investigators: Ashwin Ram and Christopher Simpkins
 - Amount: \$525K (2 years)
 - Submitted: (Whitepaper) November 2006
- **QASA: Qualitatively-Driven Content Analysis for Cross-Domain Information Sharing**
 - Solicitation: Knowledge Discovery & Dissemination (KDD)
 - Sponsor: ITIC
 - Investigators: Christopher Simpkins and Ashwin Ram
 - Amount: \$650K (2 years)
 - Submitted: (Whitepaper) November 2006
- **RIT: Human-Centered Real-Time Information Triage for Intelligence Analysts**
 - Solicitation: Knowledge Discovery & Dissemination (KDD)
 - Sponsor: ITIC
 - Investigators: Ashwin Ram and Christopher Simpkins
 - Amount: \$525K (2 years)
 - Submitted: (Whitepaper) November 2006
- **DIANA: Dynamic Intelligence Analysis Network Architecture**
 - Solicitation: Knowledge Discovery & Dissemination (KDD)
 - Sponsor: ITIC
 - Investigators: Christopher Simpkins and William Borland
 - Amount: \$860K (2 years)
 - Submitted: (Whitepaper) November 2006
- **Abductive Semantic Analysis (ASA) for Policy Reasoning in Content Analysis**

- Solicitation: AFRL BAA-06-11-IFKA "National Intelligence Community Enterprise Cyber Assurance Program (NICECAP)"
- Sponsor: DTO
- Investigators: Christopher Simpkins and Ashwin Ram
- Amount: \$700K for 18 months
- Submitted: Whitepaper: May 2006; Proposal: August 2006
- **A Maritime Activity Grammar-Based Interpreter of Maritime Events for Combat ID (MAGI)**
 - Solicitation: ONR BAA Announcement # 06-010
 - Sponsor: ONR
 - Investigators: Christopher Simpkins
 - Amount: \$2.7M (\$900K/year for 3 years)
 - Submitted: April 2006
- **Semantic Interoperability: A Survey and Manifesto for Requirements-Driven Research**
 - Solicitation: AFRL BAA6-08-IFKA, "Semantic Interoperability"
 - Sponsor: Air Force Research Lab
 - Investigators: Christopher Simpkins
 - Amount: \$50K
 - Submitted: January 2006
- **Automatic Publish/Subscribe using Real-time Information Triage**
 - Solicitation: BAA 05-06-IFKA
 - Sponsor: AFRL
 - Investigators: Christopher Simpkins and Ashwin Ram
 - Amount: \$800K - \$1M (\$400K - \$500K/year for 2 years)
 - Submitted: September 2005

Unfunded as Key Team Member and Proposal Writer

- **Languages and Tools for Advanced Agent Modeling**
 - Solicitation: BAA # HM1582-07-BAA-0005, Intelligence Community 2007 Postdoctoral Research Fellowship Program, Academic
 - Sponsor: DoD, National Geospatial Intelligence Agency, InnoVision Directorate, Office of Basic and Applied Research
 - Investigators: Charles Isbell
 - Amount: \$240K (\$120K/year for 2 years)
 - Submitted: March 2007
- **The CASE Integration Platform (CASEIP): A Dynamic Information Infrastructure for Collaborative Intelligence Analysis**
 - Solicitation: AFRL 06-02-IFKA Collaboration and Analyst System Effectiveness (CASE)

- Sponsor: AFRL
- Investigators: William C. Borland
- Amount: \$7.5M (\$1.8M/yr for 4 years, 2 months)
- Submitted: December 2005
- **CAPRI: An Information Sharing Environment that provides Collaborative, Adaptive, Personalized, Relevant Information**
 - Solicitation: AFRL 06-02-IFKA Collaboration and Analyst System Effectiveness (CASE)
 - Sponsor: AFRL
 - Investigators: Ashwin Ram
 - Amount: \$3.4M (\$850K/year for 4 years)
 - Submitted: December 2005
- **RHR-IA: Reliable Human Review—Intelligent Assistant (pronounced “rhea”)**
 - Solicitation: AFOSR BAA2005-4 (Opportunities in Information Science and Technology) PRET (Partnerships for Research Excellence and Transition)
 - Sponsor: AFOSR
 - Investigators: Ashwin Ram
 - Amount: \$850K
 - Submitted: November 2005
- **RHR-IA: Reliable Human Review—Intelligent Assistant (pronounced “rhea”)**
 - Solicitation: AFOSR BAA2005-4 (Opportunities in Information Science and Technology) PRET (Partnerships for Research Excellence and Transition)
 - Sponsor: AFOSR
 - Investigators: Ashwin Ram
 - Amount: \$850K
 - Submitted: November 2005
- **Casebook: Problem-Based Learning Software System**
 - Solicitation: NCER-06-07
 - Sponsor: Dept. of Education
 - Amount:
 - Submitted: November 2005
- **Adaptive Modern Adversary Modeling**
 - Solicitation: BAA 05-017, Topic #16, Dynamic, Adaptive Techniques for Adversary Behavior Modeling
 - Sponsor: AFOSR
 - Investigators: Ashwin Ram
 - Amount: \$1M
 - Submitted: August 2005
- **Models and Technologies for Effective Human-Agent Teaming**

- Solicitation: BAA 05-017, Topic #7: Reconfigurable Human-Agent Collaboration: Human Performance in Network-Centric Operations
- Sponsor: ONR
- Investigators: Ashwin Ram
- Amount: \$1M
- Submitted: August 2005
- **Casebook: Problem-Based Learning Software System**
 - Solicitation: ALT
 - Sponsor: NSF
 - Amount:
 - Submitted: May 2005
- **RIT: Human-Centered Real-Time Information Triage for Intelligence Analysts**
 - Solicitation: Call for 2006 Challenge Workshop Proposals
 - Sponsor: ARDA
 - Investigators: Ashwin Ram
 - Amount: \$500K for 12 months
 - Submitted: March 2005
- **Recognizing Activities and Plans in Text and Video**
 - Solicitation: Call for 2005 Challenge Workshop Proposals
 - Sponsor: ARDA
 - Investigators: Ashwin Ram and Aaron Bobick
 - Amount: \$1.5M for 18 months
 - Submitted: October 2004

Professional Affiliations

- Association for Computing Machinery (ACM)
- ACM Special Interest Group in Artificial Intelligence (SIGART)
- ACM Special Interest Group in Information Retrieval (SIGIR)