David A. Jurgens

(217) 412 8573
jurgens@cs.ucla.edu

Education

University of California, Los Angeles
Ph.D. in Computer Science
Focus: Natural Language Processing
in progress

Washington University in St. Louis
M.S. in Computer Science
Masters Thesis in Computer Vision
Graduated: August 2004

Washington University in St. Louis
B.A. in Philosophy
Second Major: Political Science
Minor: Computer Science
Graduated: May 2004, with honors

Research Interests Analogy, Information Retrieval, Corpus Analysis, Semantic Extraction, Computational Linguistics

INDUSTRIAL EXPERIENCE

September 2010 – Present **HRL Laboratories, LLC** Malibu, CA

Visiting Scientist

- Researching new methods for analyzing large scale networks, such as social networks and the applications into computational linguistics, with an emphasis on Big Data methods
- Invented a new method for analyzing the dynamics of social networks and scientific collaboration networks, and invented a new method for discovering communities in social networks by virtue of the participants social relationships, both of which are in the process of patent submission

June 2010 – September 2010 **Microsoft – Bing** Redmond, WA

Research Software Development Intern

- Developed new diagnostic methods for identifying complex fault patterns in noisy time series of monitoring data.
- Developed a validation tool for verifying the correctness of transformation scripts, which are used by all Bing services to convert data between different versions of the internal Bing API.

July 2009 – September 2009 **Microsoft – MSN Video** Redmond, WA

Software Development Intern

- Developed and invented new video fingerprinting technology to catalog MSN Video clips
- Designed a workflow that added closed captioning to MSN Video clips, which had significant value additions of searching inside the video's spoken text and provided additional content tags for search.
- Created natural language pattern extraction technology to expand the set of video tags based on website content

Summers 2006, 2007, 2008 **Sun Microsystems – Sun Labs** Burlington, MA

Graduate Intern : Contributed significantly to two different active research projects:

Project Darkstar (PDS) – *(July 2008 – Sept. 2008)*

- Developed a high-performance, transparent caching framework for read-only persistent data
- Implemented an experimental, in-memory transactional database for high-throughput performance
- Contributed additional concurrent, scalable data structures for PDS: a deque, queue and linked hash map.

(July 2007 – Sept. 2007)

- Designed and implemented a high-concurrency, scalable data structures for use in the PDS server.
- Developed a customizable logging layer to allow transactional semantics on top of existing Java logging.
- Constructed a new profiling framework and an internal testing platform with an associated scripting language for rapid test scenario prototyping.

(July 2006 – Sept. 2006)

- Investigated scheduling algorithms for a distributed, latency-optimized application server.
- Co-authored an internal white paper comparing current scheduling algorithms in a latency-bound environment.
- Invented a scheduling-related algorithm and co-invented a scheduling data structure, both of which were patented.

Project Vidscape – *(June 2006 – July 2006)*

- Developed a distributed infrastructure for annotating video segments for later text-based search.
- Designed a new heuristic for image segmentation and created new method for shape estimation as a time series.

February 2008 – June 2008 **Moscience, Inc.** Los Angeles, CA

Lead Artificial Intelligence Architect

- Developed software for a five-person start-up based on presenting internet content as a continuously browsable media stream.
- Created semantic clustering algorithm to relate pop-culture data. Relations were combined with a novel graphical front end for an internet-as-appliance browser.
- Generated a working prototype that was essential in securing a second round of angel funding.

February 2005 – September 2005 **Amazon.com** Seattle, WA

Software Development Engineer

- Developed productivity enhancing software for internal customers.
- Integrated additional vendors and data sources into the amazon.com content build, which generated an estimated 750K USD in company savings per year.
- Created new tools for enhancing developer and business productivity, resulting in a net savings of 8 hours of developer time and 15 hours of nontechnical work per week.
- Designed new alarming systems for team-maintained services to increase system stability.

RESEARCH EXPERIENCE

September 2005 – Present **University of California, Los Angeles** Los Angeles, CA

Graduate Researcher

in Natural Language Processing Group: (*Winter 2007-present*)

- Research analogy-based information retrieval techniques for cross-domain knowledge transfer
- Investigate corpus-based methods for identifying news events in documents without external sources of knowledge
- Develop an open source, high performance, cross platform software package for semantic space models of meaning.

in Digital Arithmetic Group: (*Fall 2005-Summer 2006*)

- Investigated the use of VLIW processors for performing serial most-significant-digit-first floating-point arithmetic using only integer operations.
- Developed a floating point emulation library using online-arithmetic for embedded processors.

August 2003 – August 2004 **Media and Machines Lab at Washington University in. St Louis** St. Louis, MO

Graduate Student

- Investigated representing rural and urban roads as active contours.
- Developed memory-efficient spatio-temporal representations of motion estimates using optic flow and tensor fields.
- Invented new heuristics for identifying traffic motion patterns in noisy motion data and then extracting out road maps. The output could then be used by geographical surveyors to more easily map developing regions.
- Implemented all research algorithms using the Intel C++ OpenCV library.

May 2003 – July 2004 **Center for Distributed Object Computing at Washington University in. St Louis** St. Louis, MO

Research Assistant

- Designed and implemented a distributed framework for testing the feasibility of Real-Time Java in a production environment, where components were designed to run in both the standard JVM and a Real-Time JVM.
- Used AspectJ to weave in reference counting code to replace garbage collection with scoped memory models.
- The work was presented at the DARPA PCES conference in 2004.

TEACHING EXPERIENCE

September 2006 – present **University of California, Los Angeles** Los Angeles, CA

Teaching Fellow

- Taught weekly three hour discussion on technical writing and ethics.
  - Engineering and Society: *Fall 2009, Spring 2010, Spring 2011*
- Taught one-hour discussion sections, prepared exams, and developed homework and supplemental material for courses in the Technology Management, which emphasizes topics that students would learn in an MBA program.
  - Introduction to Technology Management and Economics for Engineers: *Fall 2008*
  - Introduction to Finance and Accounting for Engineers: *Winter 2009*
- Taught two-hour discussion sections, prepared exams and developed homework for four Computer Science courses.

Compiler Construction: *Fall 2006, Winter 2007, Fall 2007, Spring 2008*	Operating Systems: *Spring 2007*
Computer Security: *Spring 2009, Winter 2010*	Artificial Intelligence: *Winter 2008*

PROGRAMMING LANGUAGES Java, Python, C, C++, C#, bash script, awk, perl, Matlab, Octave

LEADERSHIP Computer Science Graduate School Committee – Co-founder, *Fall 2007 – present*
UCLA Powerlifting Team – Founder and Coach, *Fall 2007 – present*

PATENTS "Method for stage-based cost analysis for task scheduling," with Seth T. Proctor and James Megquier. USPTO Patent application 20090328046, 2009.

"Methods and apparatus for window-based fair priority scheduling," with Seth T. Proctor and David R. Chase. USPTO Patent application 20080235693, 2007.