Huascar A. Sanchez

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Summary

I research how to make software engineers more productive.

Education

- **University of California at Santa Cruz**, Santa Cruz, CA *December, 2015*
  Ph.D. Computer Science, 2009 – 2015
  - *Dissertation:* "Source Code Curation Tooling for the Code Forager"
    (*Advisor:* Jim Whitehead)
- **San Jose State University**, San Jose, CA
  M.S. Software Engineering, 2006
  - *Thesis:* "Building Systems Using Patterns: Creating Knowledge Maps"
    (*Advisor:* M.E. Fayad)
- **Catholic University**, Managua, Nicaragua
  B.S. Information Systems Engineering, 2001

Skills

- **Languages:** Java, Javascript, Scala, some ActionScript 3, some Ruby, some Python, and some R.
- **Tools/Libraries:** Git, Spray.io, ReactJS, LoaderMax, ElasticSearch, Eclipse JDT, and Lingpipe.
- **Databases:** MySQL, MongoDB, and some PostgreSQL.
- **Other Skills:** Web application development, UX design, API design, domain analysis, agile software development, and software patterns.

Research

Source Code Curation

- Infrastructure for Curating Online Java Code Examples
  Designed and implemented *Vesperin*; a source code curation system for curating Java code examples on StackOverflow (ICSE 2015). System's functionality includes:
  - Violette: Automated DOM transformation of Q&A pages to facilitate in-place source code curation (Javascript).
  - Kiwi: RESTful source code curation API (Scala, Eclipse JDT, and Mongodb).
  - Codepacking: Automated dependency and body declarations resolution (Java).
- Assisted Java Code Examples Comprehension

Designed, formulated, and implemented atop *Vesperin* two novel techniques for assisting Java code examples comprehension (ICPC 2016).

- MethodStaging: Automated partitioning of Java code examples into a sequence of cohesive subsets of behavior where each subset increases the examples' complexity (Java, Scala, Eclipse JDT).
- MethodStaging with Reduction: Generalizing the reduction of large subsets of behavior (generated by MethodStaging) based on precedence relations between code fragments to determine what code elements are useful on first viewing, and which ones are not (Java, Scala, JGrapht, Eclipse JDT).

Search-driven development

- Complementing Code Search with Code Retargeting Capabilities

  Designed and implemented *SNIPR*; a tool that enhances the *search box* with Java code transformations, activated by intermixing query and code transformation requests (ICSE 2013).

  - Repurposed *Scalex* documentation search engine to handle code snippets retrieval (Scala, ElasticSearch).
  - Enhanced *Scalex*'s query processing step with a Java code transformation step, which responds to users' code transformation query requests (Java, Scala).

Employment

SRI International, Computer Science Laboratory, Menlo Park, CA

- Postdoctoral Fellow, November 2015–present.

  Worked on building a mining infrastructure that leverages deep program analysis and big data analytics to facilitate new mechanisms to identify/repair program errors, and new specification-based tools to synthesize new, custom programs (CAV 2016, ICSR 2016, and ICPC 2016).

University of California at Santa Cruz, Department of Computer Science, Santa Cruz, CA

- Research Assistant, Jim Whitehead, Fall 2013–Fall 2015.

  Worked on two crowdsourced program verification games (FDG 2014 & DiGRA/FDG 2016):

  - Modeled the procedural generation of game screens as a layout optimization problem. Designed/implemented different algorithms to solve it (AS3).
  - Increased assets' loading performance in games' Web version by 45% after extending games' existing loading system with *asynchronous batch assets loading* (AS3, LoaderMax).

- Research Assistant, Jim Whitehead, Fall 2011–Fall 2012.

  Worked on Botprint; a mixed initiative robot design Web tool (CCGW 2015):

  - Participated in the design and implementation of Botprint's mixed-initiative algorithms for robot design (Javascript, Three.js).
  - Investigated the interactions between placement and detailed routing of robot components. These iterations were key to finding a set of optimal placements, on a laser-cuttable chassis, for sketched robot components.

- Research Assistant, Neoklis Polyzotis, Fall 2010–Fall 2011.

  Worked on DBTune; a library for semi-automatic index tuning (SIGMOD 2012 & IEEE Data Eng. Bull. 2011).

  - Redesigned and implemented the second iteration of the *DBTune* library (Scala, Java, PostgreSQL).

Infomotor Inc., San Francisco, CA

- Consultant, 2010 – 2012
  - Developed Web applications for streamlining both reporting and presentation of critical data, monitoring key performance metrics, and delivering understandable and actionable data (Javascript, C-sharp, SQLServer).

Pearson VUE, Bloomington, MN

- Software Engineer, 2006 – 2009
  - Supported distributed applications responsible for delivering over 4 million computer-based tests a year across the globe for clients in diverse markets, such as licensure, certification (Java, SQLServer, In-house Job Scheduler).

Selected Graduate Coursework

- Software Engineering, Human Computer Interaction, Information Retrieval, Data Mining, Machine Learning, Design and Implementation of Database Systems, Topics in Database Systems (Cloud Computing), Computational Models and Complexity, and Advance Computer Graphics (Procedural Content Generation).

Books

- Fayad, M. E., **Sanchez, H. A.**, Hegde, S. G. K., Basia, A., & Vakil, A. (2014). Software Patterns, Knowledge Maps, and Domain Analysis. CRC Press, 2014. ISBN 9781466571433.

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