

Benjamin Dicken | Curriculum Vitae

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Interests

Software Engineering	Building, testing, documenting, and maintaining software from the ground-up is one of my passions. In my past software engineering experience, especially at Dataware Ventures, I have had the opportunity to do exactly this. I have been personally responsible for prototyping and building multiple tools from the ground-up. I enjoy writing well-organized and well-documented code. Doing this has provided me with a wealth of experience with version-control (git, github, svn), IDEs (vim, Eclipse, Kdevelop, Xcode), and other project development/management tools (travis-ci, buildbot, Digital Ocean, waffle, huboard, slack, etc).
Program Analysis	Both static and dynamic program analysis are of great interest to me. I have written many custom dynamic analysis tools using the Intel Pin API, GDB's Python API, LLDB's various APIs, and custom valgrind tools. In addition, I have experience writing static program analysis tools in with the clang, LLVM, and libdwarf APIs, and working with tools like objdump, nm, and dwarfdump.
Web Engineering	I have built many web applications with JS, python, HTML/CSS for or school projects, research groups, and personal projects. I also have experience with widely-used libraries and technologies such as JQuery, NodeJS, D3.js, and more. A subset of my web application projects can be seen on my website.
Community	Learning from, communicating with, and giving back to others in the computer science community is important to me. I highly value going to conferences to learn from others, presenting a topic to an audience, teaching/counseling others, and working in tight-knit groups of software engineers who are passionate about the projects they are a part of.

Professional

- Jan 2017–Present | **Lecturer at the University of Arizona**
Responsible for teaching a variety of courses in the department of computer science at the University of Arizona.
- Jan 2013–Dec 2016 | **Software Developer at Dataware Ventures**
Initially in a part-time capacity. Hired on full-time upon graduation. Dataware Ventures is a software development firm catering to the data analytics and Database Management System (DBMS) optimization segment of the industry. Dataware works to improve the performance of both open-source and proprietary software. My primary responsibility is writing static and dynamic program analysis tools using industry-standard libraries and frameworks such as LLVM, Intel Pin, Valgrind, gdb, rr, and more. These tools were used to analyse the characteristics of small and large programs. In addition, I did work in optimizing the postgres DBMS, and wrote tools to measure software performance improvement between versions. Heavy usage of C, C++, Python, and Java.
- Aug 2008–Aug 2012 | **Undergraduate IT Analyst at University of Arizona**
Undergraduate IT Analyst at the University of Arizona – Udall Center. Responsible for UNIX server administration, developing and maintaining database-driven web applications, and troubleshooting hardware and software issues for faculty, staff and student computers on Mac, Windows, and Linux operating systems. Assist in administration of Udall Center networks and servers in five buildings across the University of Arizona campus.

Research

- 2012–2013 | **AZDBLab REU**
Arizona Database Laboratory research member at the University of Arizona. Held an NSF-funded REU position working on a software system under the guidance of Dr. Richard Snodgrass. This software system is designed for query execution and query runtime analysis for many popular DBMSs. Work includes server/client network interactions, source code re-factoring, mobile and web application development, and DBMS interaction with SQL. Software written in Objective-C, Java, JSP, XML, and Javascript.
- 2012 | **Computer Vision Research – SLIC**
Undergraduate computer vision research at the University of Arizona – Computer Vision group. Worked with Dr. Kobus Barnard and Dr. Alon Efrat on the SLIC computer vision project. Led the development of the SLIC iOS mobile application, expanded the SLIC content retrieval and search API using PHP and SQL, and worked on improvements to the SLIC front-end web interface.

Education

- 2013–2015 | MS Degree in Computer Science, University of Arizona.
- 2010–2013 | BS Degree in Computer Science, minor in ISTA, University of Arizona.
- 2007–2010 | Associates Degree in Liberal Arts, Pima Community College.

Community

- 2012–2015 | Heavy involvement in the ACM student club at the University of Arizona, both as a member and an officer. Helped coordinate hackathon and programming-competition events, delivered presentations, and assisted with club management.

Languages

Proficient in	C, C++, Java, Bash, Javascript, HTML+CSS, Python
Familiar with	PHP, R, SQL
Experience with	Perl, Scala, Objective-C

Library and Tools Familiarity

Java	Eclipse, ANT, JDBC, ORM (Hibernate), JUnit
C/C++	GCC, GDB, RR, Valgrind, Clang/LLVM, Intel Pin, Boost
Web	Apache server, JQuery, NodeJS, D3.js
Mobile	Xcode, PhoneGap
DBMS	MySQL, Postgres, SQLite
General	Vim, bash, zsh, unix

Conferences

Oct 2015	LLVM Developer's Meeting. Attendee. San Jose, California
Feb 2015	International Symposium on Code Generation and Optimization (CGO). Attendee. San Francisco, California
Dec 2012	Global Symposium on Racing and Gaming. Presented educational racetrack industry software written by my team and I. Tucson, Arizona.

Awards

2013	UA CSc Excellence in Undergraduate Research Award
2012	Galileo Circle Society Scholar Award
2010	Arizona Board of Regents High Honors Tuition Scholarship
2010	Tucson Chamber of Commerce high school senior scholarship award
2010	Pima Federal Credit Union high school senior scholarship award

Graduate Courses

CSc 552	Advanced Operating Systems
CSc 547	Green Computing
CSc 520	Principles of Programming Languages
CSc 560	Database Systems Implementation
CSc 573	Theory of Computation
CSc 566	Computer Security
CSc 538	Computational Linguistics
CSc 555	Advanced Natural Language Processing
CSc 544	Data Visualization

Major Courses

CSc 127a	Introduction to Computer Science
CSc 127b	Introduction to Computer Science
CSc 245	Introduction to Discrete Structures
CSc 345	Analysis of Discrete Structures
CSc 335	Object-Oriented Programming and Design
CSc 337	Web Programming
CSc 252	Computer Organization
CSc 352	Systems Programming and UNIX
CSc 473	Automata, Grammars and Languages
CSc 445	Algorithms
CSc 460	Database Systems
CSc 452	Operating Systems
CSc 422	Parallel and Distributed Programming

Minor Courses

ISTA 100	Great Ideas of the Information Age
ISTA 116	Statistical Foundations
ISTA 161	Digital Ethics
ISTA 120	Dealing with Data
ISTA 301	Computing in the Arts
ISTA 392	iOS App Development for Citizen Science
ISTA 401	Designing an Installation