Martin Velez

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Education

Ph.D., Computer Science, University of California, Davis, USA, 2018.
- Thesis: Minimizing Technical Barriers to Learning Programming
- Advisor: Prof. Zhendong Su

B.A., Economics with minor in Computer Science, University of California, Davis, USA, 2010.

Research Experience

2012 - 2018	**Graduate Student Researcher**, Computer Science, University of California, Davis.
2009 - 2012	**Student Research Assistant**, Computer Science, University of California, Davis.

Awards

2013 - 2018	National Science Foundation Graduate Research Fellowship. – Submission: "Minimalistic Programming".
2016 - 2018	UCD Graduate Group in Computer Science Travel Award (once per year).
2016	Verification Mentorship Workshop Travel Award.
2014	Gold Medal, SPLASH Student Research Competition. – Submission: A Study of "Wheat" and "Chaff" in Source Code.
2012	UCD College of Engineering Towards Outstanding and Promising Students Fellowship.

Publications

1. Martin Velez, Michael Yen, Mathew Le, Zhendong Su, and Mohammad Amin Alipour. **Kodethon: A Uniform Programming Platform for CS Education.** *Submitted to* The 50th ACM Technical Symposium on Computer Science Education (SIGSCE).

2. Martin Velez, Chengnian Sun, Nima Joharizadeh, Haichuan Wang, and Zhendong Su. **CompAssist: Synthesis of Minimal Compilation Repair Examples.** *Submitted to* The 41st ACM/IEEE International Conference on Software Engineering (ICSE).

3. Martin Velez, Dong Qiu, You Zhou, Earl Barr, and Zhendong Su. **On the Lexical Distinguishability of Source Code.** CoRR abs/1502.01410 (2018).

4. Rachel L. Toaff-Rosenstein, Martin Velez, and Cassandra B. Tucker. **Heifer Use of an Automated Grooming Brush and Potential for Radiofrequency Identification-based Measurements of this Behavior.** Journal of Dairy Science, Volume 100, Issue 10, October 2017, Pages 8430-8437.

5. Molly Spencer, Emma Sage, Martin Velez, and Jean-Xavier Guinard. **Using Single Free Sorting and Multivariate Exploratory Methods to Design a New Coffee Taster's Flavor Wheel.** Journal of Food Science, Volume 81, Issue 12, December 2016, Pages S2997S3005. (Selected to be on the cover. 🏆)

Selected Projects

Kodethon

Kodethon is a web-based integrated development environment (IDE) where students can program in all of the programming languages used at UC Davis, including Python, C, `C++`, Java, Lisp, and Prolog. Students can create multi-file projects and organize their files using a traditional UNIX directory structure. Their files are stored in the cloud and can be accessed from a variety of devices including smart phones and tablets. The built-in editor provides convenient features like syntax-highlighting and basic auto-completion. Students can use an easy-to-use shell or a full Unix terminal – within the browser – to execute Unix commands. Kodethon also supports real-time collaboration which facilitates pair programming and live teaching assistance. To date, Kodethon has been used by over 3,000 students in at least 15 different courses.

- Homepage: `https://kodethon.com`.
- Video Demo: `https://www.youtube.com/watch?v=c2GEsIjpek8`.
- Technologies: AngularJS, Ruby-on-Rails, Ruby, JavaScript, Docker, PostgreSQL, Redis, Firebase, Memcached, ZFS, RabbitMQ, HTML, CSS.

COMPASSIST

Every programmer, from novices to professionals, makes compilation errors. Resolving them can be time-consuming, difficult, and frustrating, especially for novices. COMPASSIST is a web application prototype that generates and refines compilation repair examples. Based on these examples, it suggests possible patches to users when their program fails to compile. The repair examples are synthesized and reduced using a novel FUZZ-AND-REDUCE technique.

- Homepage: `https://srg.cs.ucdavis.edu/metacompiler`.
- Video Demo: `https://www.youtube.com/watch?v=fRUU4uGUvEY`.
- Technologies: Java, `C++`, Clang, Ruby-on-Rails, Ruby, JavaScript, PostgreSQL.

Code Search

A common task for developers is to search for code examples. For example, a developer may want to see example snippets illustrating how to declare an array in C or open a file in Python. Code Search is a web application that allows a user to enter a natural language query to search for code snippets. We learn the mapping of natural language terms to code snippets by analyzing over 4 million snippets from a public Stack Overflow data dump.

- Homepage: `https://srg.cs.ucdavis.edu/code_search`.
- Video Demo: `https://www.youtube.com/watch?v=wkJ4rf4Xi9w`.
- Technologies: AngularJS, Ruby-on-Rails, Apache Lucene.

Cow Grooming Tracker

Healthy cattle readily use grooming brushes but this behavior subsides when animals become ill. Tracking use of a brush may provide an opportunity for health monitoring, especially if the process could be automated. We assessed how healthy heifers groom themselves on a brush and hypothesized that radio-frequency identification (RFID) could be used to accurately and automatically record this behavior. Angus and Hereford heifers were fitted with 2 ultra-high-frequency RFID ear tags and monitored in groups of 8 while housed in a pen with an electronic brush, video cameras, and 4 RFID antennas.

- Homepage: `https://bitbucket.org/martinvelez/bovine_brd`
- Technologies: Java, Eclipse, Ruby-on-Rails, Ruby, JavaScript, PostgreSQL.

Teaching Experience

Win 2017	**Teaching Assistant**, Programming Languages (ECS 140A), UC Davis – Instructor: Prof. Zhendong Su
Win 2016	**Guest Lecturer**, Programming Languages (ECS 140A), UC Davis – Instructor: Prof. Cindy Rubio-González
Win 2016	**Reader**, Programming Languages (ECS 140A), UC Davis – Instructor: Prof. Cindy Rubio-Gonzaález
Sum 2016	**Tutor**, Introduction to Programming (ECS 10), UC Davis – Instructor: Dale Fletter
Fall 2015	**Guest Lecturer**, Programming Languages (ECS 140A), UC Davis – Instructor: Prof. Zhendong Su
Fall 2015	**Teaching Assistant**, Programming Languages (ECS 140A), UC Davis – Instructor: Prof. Zhendong Su
Fall 2015	**Tutor**, Introduction to Programming (ECS 30), UC Davis – Instructor: Matthew Butner

Invited Talks

Oct 2016	Kodethon: Cloud Development Environment and Learning Management System. California State University, Sacramento, CA, USA.
April 2012	Studying Computer Science. Franklin High School, Stockton, CA, USA.

Service

Reviewer	FSE 2015, SETTA 2016.
Web Chair	FSE 2016.
Volunteer	PLDI 2016.

Undergraduate Mentoring

2014 - 2018	Michael Yen. Current: Master's Student @ UC Davis.
2016 - 2017	Alisha Nanda. Current: Undergraduate Intern @ Microsoft
2016	Mathew Le. Current: Software Engineer @ Skillz, Inc.
2016	Andrew Mendoza. Current: Software Engineer @ L3 ComCept.
2014	Jazmin Tinajero Pineda. Current: Content Entry @ Mary Kay, Inc.
2014	Arjun Bharadwaj. Current: Software Developer @ Bank of America.
2012 - 2013	You Zhou. Current: Software Engineer @ Facebook.

Selected Press

Wired	Taste Coffee Like a Pro with this Gorgeous Flavor Wheel. https://www.wired.com/2016/02/ taste-coffee-like-a-pro-with-this-gorgeous-flavor-wheel/
IT World	Your Code is Far More Chaff than Wheat. https://www.itworld.com/article/2881655/ your-code-is-far-more-chaff-than-wheat.html

Previous Work Experience

Dec 2010 - May 2012	**Member Relationship Specialist**, The Golden 1 Credit Union, Sacramento, CA, USA. – Sold and serviced financial products and services.
Jan 2010 - Dec 2010	**Partner**, Axiom Software, Sacramento, CA, USA. – Provided website design and programming services.
Sep 2007 - Apr 2010	**Research Coordinator**, Human and Community Development, University of California, Davis, CA, USA. – Developed a PHP web application which handled all of the personal and appointment data of over 600 families participating in a ten-year $10M research study.
Oct 2005 - Jul 2007	**Operations Manager**, Hispanic Teleservices Corporation, Zapopan, Jalisco, Mexico. – Led a team of 80+ customer service and collections agents, supervisors, QA coaches, and trainers.
Jun 2004 - Sep 2004	**Carpenter's Apprentice**, J. Roy Construction, Davis, CA, USA.
Oct 2002 - Jun 2005	**Cook III**, Sodexho Dining Services, Davis, CA, USA.

References

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