

# Miguel Velez

*Ph.D. Student in Software Engineering*

Carnegie Mellon University  
School of Computer Science  
Institute for Software Research  
✉ mvelezce [at] cs.cmu.edu  
🌐 <http://www.cs.cmu.edu/~mvelezce/>  
in miguelvelezmj25

*"Premature optimization is the root of all evil" -Donald Knuth*

## Education

- 2016–Present **Ph.D. Software Engineering**, *Carnegie Mellon University*, Pittsburgh, PA, USA.
- 2010–2015 **B.A. Computer Science (Physics minor)**, *University of St Thomas*, St. Paul, MN, USA.  
Advisor: Patrick Jarvis. Summa Cum Laude paper: "Current and Future Relationships Between Robots and Humans."

## Research Experience

- 2016–Present **Graduate Research Assistant**, *Carnegie Mellon University*, Pittsburgh, PA, USA.
- Summer 2015 **Research Intern**, *Massachusetts Institute of Technology*, Cambridge, MA.  
Implemented features in Sketch that increased its expressiveness and made it more powerful.
- 2014–2015 **Undergraduate Student Researcher**, *University of St. Thomas*, St. Paul, MN.  
Parallelized CHA to increase the efficiency of analyzing the reachability of methods in source code. Enhanced WAH compression technique to query faster and more efficiently with two sets of metadata. Implemented a programming language that analyzed user input related to organic chemistry.

## Industry Experience

- Spring 2016 **Application Developer/Software Engineer**, *Sportradar US*, Minneapolis, MN.  
Accepted full-time offer. Developed an ETL application using Ruby that provided data for the NFL Radar360 research tool.
- Fall 2015 **Application Developer/Software Engineer**, *Sportradar US*, Minneapolis, MN.  
Built a Ruby monitoring application to parse and build Formula 1 feeds.
- Spring 2015 **Jr. Application Developer**, *SportsData/Sportradar US*, Minneapolis, MN.  
Implemented an application to parse and build MLB feeds using Ruby.
- 2013–2015 **Cloud Developer Intern**, *Valtira*, Minneapolis, MN.  
Implemented and maintained web applications with Java servlets, AngularJS, and MySQL databases.

---

## Publications

### Refereed Conference Publications

- [1] Miguel Velez, Jason Sawin, Alexia Ingerson, and David Chiu. "Improving Bitmap Execution Performance Using Column-Based Metadata". In *The IEEE 4th International Conference on Future Internet of Things and Cloud (FiCloud)*. Vienna, Austria, Aug. 2016.

### Miscellaneous

- [5] Miguel Velez and Jason Sawin. *Improving the Efficiency of CHA through Parallelization*. Poster. Inquiry at St. Thomas. May 2016.
- [4] Miguel Velez and Jason Sawin. *Faster WAH Compression Querying through the Use of Metadata*. Poster. Consortium for Computing Sciences in Colleges Midwest Region. 1<sup>st</sup> place Discovery Track. Oct. 2015.
- [3] Miguel Velez and Armando Solar-Lezama. *Simpler Implementation of Sketches through Enhanced Expressiveness*. Poster. MIT Summer Research Poster Session. Aug. 2015.
- [2] Miguel Velez. *Current and Future Relationships Between Robots and Humans*. Summa Cum Laude Paper. Apr. 2015.
- [1] Miguel Velez, Peter Gittins, and Jason Sawin. *Extending SMILES to Encode Reaction Mechanisms*. Poster. Inquiry at St. Thomas. May 2014.

---

## Awards and Honors

- **MSRP Research Internship at MIT**, 2015. Acceptance rate: 10.5%
- **CCSC:MW 2015 1<sup>st</sup> place Student Posters & Showcase Discovery Track**, 2015. \$100
- **UST Student Travel Grant**, 2015. \$750
- **UST Collaborative Inquiry Grant**, 2014, 2015. \$2000
- **International Student Leadership Scholarship**, 2012. \$500
- **UST Dean's Honor List**, 2010-2015.
- **University of St. Thomas International Scholarship**, 2010-2015.
- **University of St. Thomas Tuition Scholarship**, 2010-2015.
- **American Field Service International Scholarship**, 2008-2009.

---

## Other Interests and Activities

- Science Club for Girls volunteer. Cambridge, MN. June 2015
- UST Game Design Club 2014 – 2015.
- Note taker 2013, 2015. Helped two students with disabilities to take notes in class.
- UST Computer Science Consultant 2012 – 2015.
- UST Computer Science Club 2011 – 2015.
- UST Globally Minded Student Association 2010 – 2015.
- St. Thomas Activities and Recreation President 2012 – 2013.
- St. Thomas Activities and Recreation Intern 2011 – 2012.
- UST Spanish Tutor 2010 – 2012.

- 2 STEM Learning Communities 2011.
- UST Morrison Hall Council 2010 – 2011.

---

## References

### **Jason Sawin**

Department of Computer & Information  
Sciences

University of St. Thomas

✉ jason.sawin [at] stthomas.edu

☎ +1 651 962 5478

### **Armando Solar-Lezama**

Department of Electrical Engineering  
and Computer Science

Massachusetts Institute of Technology

✉ asolar [at] csail.mit.edu

☎ +1 617 258 9727

### **Patrick Jarvis**

Department of Computer & Information  
Sciences

University of St. Thomas

✉ pljarvis [at] stthomas.edu

☎ +1 651 962 5482