Robert C. Senkbeil

rcsvt@vt.edu

Current Address:
10300 Jollyville Rd.
Apt. 1111
Austin, TX 78759
(256) 283-4357

Permanent Address:
10300 Jollyville Rd.
Apt. 1111
Austin, TX 78759
(256) 283-4357

Education

Virginia Polytechnic Institute and State University, Blacksburg VA
- Overall GPA of 3.80

B.S., Computer Engineering, graduated summa cum laude, December 2013
- In-major GPA of 3.78

B.S., Computer Science, graduated summa cum laude, May 2013
- In-major GPA of 4.0

Work Experience

IBM Extreme Blue Internship, IBM 501, RTP, NC Summer 2013
- Worked on cloud-based monitoring, analysis of problems on an application level, and providing solutions to application-level problems.
- Wrote a RESTful API with the Ruby (1.9) language.
- Wrote unit tests with proper mocking of material using Ruby's MiniTest library.
- Worked with the Lucene query language for unstructured data.
- Wrote additional documentation using Markdown syntax.
- Constructed a Ruby Gem for the product so it could be packaged and shipped quickly.
- Conceptualized a unique mobile user experience to display data in an uncluttered and simplistic manner.
- Gained experience with pitch-oriented presentations for a product by presenting to IBM vice presidents and fellows.

CS 3114 Undergraduate TA, Virginia Tech, Blacksburg, VA Spring 2013
- Aided undergraduate students with course material and assignments involving advanced data structures and search algorithms, particularly using the Java language.

IBM Rational Quality Manager Co-Op, IBM 501, RTP, NC Summer/Fall 2012
- Worked on Rational Quality Manager defects and enhancements written in Java.
- Worked on RQM Import Tool for Microsoft Word/Excel defects and enhancements written in C#.
- Gained experience with industry team communication and large-scale product development.
- Worked with Rational Team Concert for source control, reporting, and task management.

Microprocessor Platform Evaluation, Virginia Tech, Blacksburg, VA Spring 2011
- Tested features and reported the pros and cons of various microprocessor boards being considered as replacements for the Spartan 3E Starter Board.
- Wrote hardware-oriented test code in C.

Course Projects

ECE 4534: Embedded System Design, C Spring 2013

- Designed and wrote code for ARM and PIC processors that interfaced with XBee wireless devices, Sabretooth motor controllers, and Sharp IR sensors to navigate a four-wheel rover through a maze and perform more efficiently on additional runs.
- Designed APIs for communication between various hardware devices in both wired and wireless conditions.
- Wrote I^2C communication APIs at a bit level for PIC processors.
- Designed and wrote a wireless communication state machine where packets of data were bundled with a checksum and additional verification bytes used to validate the contents of a packet.
- Wrote timer-based sensor communication for Sharp IR sensors.
- Wrote state-defending code to ensure that PIC processors remained in valid states during the rover's navigation.
- Video: `http://youtu.be/vfqsfTlCoaM`

CS 4104: Data and Algorithm Analysis, Pseudo Code Spring 2013

- Demonstrated an understanding of dynamic programming.
- Demonstrated an understanding of greedy algorithms.
- Demonstrated an understanding of proving problems as NP-complete.

CS 4644: Creative Computing Studio, Unity Spring 2012

- Designed a 3D video game to be presented at the end of the semester.
- Gained experience working with other majors such as art, music, and education.

CS 4204: Computer Graphics, C++ Spring 2012

- Project 1: Use tree-based modeling to render a 3D robot with OpenGL.
- Project 2: Demonstrate an understanding of lighting, textures, and material effects with the 3D robot of project 1 using OpenGL.
- Project 3: Demonstrate an understanding of keyframes, tweening algorithms, and framerate locking by providing functionality to create animations with the robot from project 2.
- Project 4: Demonstrate an understanding of OpenGL shaders by rendering a texture as a wavy surface and mapping another texture onto it using vertex and fragment shaders.

CS 3214: Introduction to Computer Systems, ASM & C Spring 2012

- Gained experience stepping through assembly and understanding how C translates to it and vice versa.
- Gained experience with shell development by creating a generic shell capable of managing jobs, providing builtin commands, and providing extra commands through custom plugins.
- Gained experience with memory handling by designing malloc, realloc, and free functions.
- Gained experience with threading by designing a thread pool.
- Gained experience with HTTP servers by writing a simple server capable of file serving and running some information-retrieving processes and replying to requests in HTTP 1.0/1.1.

CS 3114: Data Structures & Algorithms 2, Java Fall 2011

- Project 1: Virtual buffer pool to simulate memory insertion, deletion, and sorting.
- Project 2: Quad tree written to provide spacial sorting for geographic locations.
- Project 3: External sorting using an external heapsort.
- Project 4: Sorting geographic information using external sorting of quad trees and BSTs using a buffer pool to maintain changes to write back to files.

Undergrad Research

Auburn Unmanned Aerial Vehicle Research, Auburn, AL Summer 2011

- Researched various collision avoidance algorithms and determined possible ways they could be applied to real-time UAV flight.
- Assembled auto-pilot boards to be integrated with UAVs.
- Implemented a physics-inspired algorithm in C++ to work with the ROS Framework used by the UAVs.
- Won competition between three teams for best algorithm performance.

Web-CAT Javassist Research, Virginia Tech, Blacksburg, VA Fall 2010

- Researched ways of using Javassist libraries to dynamically alter bytecode when loading class files.
- Used Javassist libraries to alter student-written test cases to use reflective-based libraries.

Side Projects

ACM Website, HTML 5, CSS 3, Javascript, Markdown, Eco Fall 2013

- Wrote base ACM website for Virginia Tech during a weekend.
- Used semantic HTML 5 and CSS 3 (rounded borders).
- Wrote Javascript to integrate with Google's Calendar through a REST API and update the page using AJAX techniques.
- Statically templated the website using Docpad and languages like Markdown and Eco (embed Coffeescript logic in your markup).

Activities

Autonomous Mastery Prototyping Lab, 2013
(Meeting Leader, 2013)
Virginia Tech Gaming Project, 2010 – 2013
(President, 2011 – 2012), (Vice-President, 2010 – 2011)
Association for Computing Machinery, 2009 – 2013
(President, 2013), (Webmaster, 2011 – 2013)
Institute of Electrical and Electronics Engineers, 2010 – 2013
Big Event Participant, 2012 – 2013
Hokie Camp Counselor, Summer 2010

Honors

Phi Beta Kappa, 2013
Upsilon Pi Epsilon, 2012 – 2013
Tau Beta Pi, 2010 – 2013
Juanarena Scholarship, 2010 – 2011
Eta Kappa Nu Electrical and Computer Engineering Honor Society, 2010 – 2013
(Webmaster, 2010 – 2012), (IEEE Representative, 2010 – 2011),
(Recruitment Officer, 2011 – 2012), (Service Chair, 2011 – 2012)
Phi Kappa Phi, 2011 – 2013
Golden Key, 2010 – 2013
National Society of Collegiate Scholars, 2010 – 2013
University Honors Program, 2009 – 2013
Dean's List with Distinction, Spring 2010, Fall 2010, Fall 2011, Spring 2012
Dean's List, Fall 2009, Spring 2011, Spring 2013, Fall 2013