

# Shiva Talwar

Electrical Engineering | University of Waterloo



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hackerrank.com/shivatalwar

## TECHNICAL PROFICIENCIES

- Working experience with full stack software development including Node.js, AngularJS, MongoDB, npm, jQuery, AJAX
- Deep understanding of the architectures, protocols and algorithms underlying modern distributed systems
- Exceptional design knowledge of high-speed communication protocols such as I<sup>2</sup>C, RS232, and SPI
- Practical experience with Linux kernel development alongside ARM based FPGAs and application-specific IC systems
- Extensive experience with image processing such as template matching, finding contours, and object character recognition
- Expert knowledge of all AWS tools (Amazon DynamoDB, EC2, SQS, S3, CF), Google Web Toolkit, Tomcat, and Spring Beans
- Proficient knowledge of low-level programming on various microprocessor architectures using JTAG debugging tools.
- Excellent understanding of embedded systems, notably synchronous/asynchronous serial communication systems

## EDUCATION AND SKILLS

**University of Waterloo, Waterloo, ON** - April 2016

Honours Bachelor of Applied Sciences, Electrical Engineering

Sep 2011 - April 2016

Relevant Courses: Data Structures & Algorithms   Distributed Computing   Embedded Systems   Algorithm Design & Analysis  
Radio & Wireless Systems (RF)   Artificial Intelligence   Machine Learning   Analog & Digital Communication

### Languages

C, C++, C#, VHDL, Java, Python, ASP.NET, SQL, MATLAB, Assembly, Javascript, HTML, CSS, GWT, AngularJS, Node.js, XML, JSON, React

### Software

Visual Studio, Eclipse, VisualDSP++, Altium, NI Circuit Design Suite, MultiSim, Verilog, Xilinx Design Suite, Android SDK, IntelliJ, Selenium, JIRA, Jenkins, VMware, Tomcat

### Hardware

ARM, Arduino, FPGA (Altera Cyclone Series, ZedBoard)

### Additional Miscellaneous

Client-Server (DNS, HTTP, REST, LDAP), RPCs (Thrift), Distributed File Systems(NFS,HDFS), Analytics Platforms (Hadoop,Spark), Computations (PageRank), NoSQL Storage (Cassandra,HBase), Distributed Databases (Hive, Impala), Computer Vision (OpenCV, Tesseract-OCR)

## WORK EXPERIENCES

**Amazon Web Services**, Software Development Engineer (Co-op) Palo Alto, California   Aug 2015 - Dec 2015

- Created a client-side solution to maintain identical copies of DynamoDB tables across different AWS data center regions, in real time.
- Used AngularJS & GWT alongside AWS in order to eventually consist data between tables across regions in single digit ms latency.
- Designed specialized Spring Beans to regionalize AWS clients and asynchronous RPC model proxies from client side to server.
- Led this MVC architecture project to production release using Tomcat and is available worldwide at [aws.amazon.com](http://aws.amazon.com)



**Smart Technologies**, Firmware Engineer (Co-op) Calgary, Alberta

May 2014 - Apr 2015

- Developed real-time pattern detection algorithm using OpenCV to detect cosmetic and performance defects on retro reflective tape.
- Designed prototype for Linux embedded system on ARM based FPGA SoC to work with a Bluetooth and Wi-Fi module .
- Used Xilinx Design Suite to map pins and generate bitstream to physically connect hardware to the FPGA's fabric.
- Modifications to U-boot, First Stage Bootloader, Linux Kernel, and Device Tree led to the completion of this prototype.
- Reverse Engineered an outsourced firmware upgrade of SMART boards using I<sup>2</sup>C Analyzer and oscilloscope.
- Developed I<sup>2</sup>C driver to send/receive firmware upgrade of RAW bin file in 256 byte chunks with checkbit.
- Implemented full stack(node,mongoDB) service to send sticky notes from mobile device to SMART boards through Java Native Interface layer with sticky note text/drawing sent in JSON.



**ON Semiconductor**, Firmware Developer (Co-op) Waterloo, Ontario

Sep 2013 - Dec 2013

- Worked on live signal debugging for RS232 and I<sup>2</sup>C transmission to high speed hearing aid programmers.
- Designed I<sup>2</sup>C & RS232 drivers to allow support of three more high speed hearing aid programmers, resulting in over 1000 employees and suppliers being able to develop DSP tools on hearing aid devices more conveniently.



**BlackBerry**, Software Engineer (Co-op) Waterloo, Ontario

Jan 2013 - Apr 2013

- Proposed and implemented automated monthly project reports now used by over 100 managers each month.
- Developed aforementioned reports via asynchronous document with jQuery using AJAX in an ASP.NET environment.



**Wicked Interactive Ltd**, Web Developer (Co-op) Toronto, Ontario

Apr 2012 - Aug 2012

- Designed and Implemented a cart system and several animated landing pages in ASP.NET with CSS3 transforms.
- Managed user and product databases using MySQL and quadrupled the number of hits to the site.



## RELEVANT PROJECTS



FollowCam Drone

-Built human tracking UAV using image processing, control theory, I<sup>2</sup>C ([Testing Video](#), [Github](#))



GitHub Side Projects

-[Dota 2 Twitch Image Processing](#), [Face and Eye Detection](#), Dota 2 Drafting Simulator (Android)



HackTheNorth(hackathon)

-Participated in [hackthenorth.com](http://hackthenorth.com). Design & code of intelligent preference magazine