Amente Bekele

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Work Experience

IBM **4 years**
Advisory Software Developer *May 2015–Present*

I am currently a technical lead on a team that is developing a modern mobile app with React-Native and associated back-end services with Node.js and Java. Prior to that, I made significant contributions to the design of IBM Watson Analytics for Social Media from its conception to delivering a scalable cloud software in production. I mainly focused on designing and implementing REST API's for data collection and visualization micro-services. I contributed to the social data analytics pipeline back-end implemented with Apache Spark utilizing Kafka and Zookeeper. In all of the projects that I worked in, I championed DevOps practices by designing and implementing automated deployment and continuous integration processes using Jenkins, Docker, Ansible, Chef and Kubernetes.

IBM **16 months**
Extreme Blue Technical Intern and Software Developer Co-op *May 2013–Aug 2014*

I worked in a team to develop a prototype for Social Media Analytics application on IBM's PAAS BlueMix. I used Node.js, Java and Cloudant DBAAS technologies. I collaborated with a client to identify their requirements and delivered a proof of concept. I prepared and delivered a pitch to senior executives and the CEO of IBM on the business value proposition. During my co-op work terms, I worked on advanced log analysis tool for IBM Cognos L3 support team using Eclipse RCP. I developed Eclipse Plugin for an in house build automation tool written in Python, which improved the workflow for developers.

Carleton University **3 years**
Research Assistant, Teaching Assistant, Lab Assistant *July 2012–December 2015*

Throughout my undergraduate studies at Carleton University, I gained experience working part time in different roles. As a Research Assistant at the Bio-informatics Lab, I developed a web application for searching a protein-protein interaction prediction database using PHP and MySQL. As a teaching assistant for SYSC 4906 (special topics on ARM-Cortex M micro-controllers), I mentored twenty students in a highly project driven course. I also had the chance to develop a lab for a senior year micro-controllers course by porting over lab materials from Intel 8051 to ARM Cortex M4.

Grype Solutions **6 months**
Software Developer *July 2012–January 2013*

I developed the shopping cart UI for a web based Point of Sale Terminal software written in C# and ASP.NET. I also implemented the interface for a receipt printer and bar-code scanner.

Education

Academic Qualifications

Carleton University **Ottawa**
MASc Electrical and Computer Engineering, Data Science Specialization, *2016–September 2018*
My thesis was on *Neonatal Respiratory Rate Monitoring using a Pressure-Sensitive Mat* through the application of data analysis, digital signal processing and machine learning for patient monitoring in Neonatal Intensive Care Unit (NICU).

Carleton University **Ottawa**
B.Eng. Computer Systems Engineering , Graduated May 2016, CGPA: 10.85/12 (A) *2011–2016*

Addis Ababa University **Ethiopia**
BSc Electrical and Computer Engineering, Achieved 2nd Year Level. GPA 3.6/4 *2009–2011*

Technical skills

- **Programming Languages:** Over 10000 lines: **Java, JavaScript(TypeScript)** Over 5000 lines: **Python, C, C#** Familiar: **Scala, C++**
- **Distributed Systems Frameworks and Tools:** Experience in: **Kubernetes**, **Docker**, **Kafka**, **Zookeeper**
- **Data Analytics and Machine Learning: Spark**, **MATLAB**, **Scipy**, **Tensorflow**
- **Hardware:** ARM Cortex M, Zigbee Networks, Bluetooth, Wifi, Hardware Protocols and Interfaces: I2C, SPI, USB

Notable Projects and Extra-curricular activity

- **AlertBuddy: Wearable Emergency Alerting Device for the Hearing Impaired** *(Engineering Capstone Project)*

  I designed and implemented emergency alarm audio detection algorithm using Digital Signal Processing (DSP) and Artificial Neural Networks (ANN). I worked in a team to develop a compact wearable wrist device hardware and mobile application.
- **Controlling a Humanoid Robot using Kinect V2** *(Course project)*

  I worked in a team to develop a firmware for controlling humanoid robot using C and the Cortex Micro-controller Software Interface Standard (CMSIS). I developed a user software in C#, using Microsoft .NET Framework 4.5 and WPF to interface with the Kinect V2 hardware.
- **International Annual CanSat Competition** *(2013,2015 & 2016)*

  I led a team of ten engineering students which designed a can sized satellite system to take part in the international annual CanSat Competition. My team ranked 8th out of 36 teams worldwide. I worked on system firmware for a Freescale HC08 micro-controller using C to interface sensors. I also designed and implemented a ZigBee wireless mesh network using XBee radios.
- **IEEE Carleton University Student Branch** *(Chair, Computer Society Chair, Webmaster)*

  During my undergraduate studies, I was involved in the student branch starting as a volunteer and later on serving in multiple leadership roles. I developed a website that won 1st place in the 2012 IEEE Student Branch Global Web Site Contest. I also organized IEEE Code Jam junior student programming contest and IEEE Eastern Ontario Oral Papers competition. I also participated in planning and coordinating various workshops, networking events and outreach activities. In recognition of my involvement, I was awarded the IEEE Computer Society Richard Merwin scholarship and IEEE Canadian Foundation scholarship.
- **Carleton University Robotics Club** *(Workshop Coordinator, Project Lead)*

  I organized and presented introductory robotics and micro-controller programming workshops using Arduino IDE and C/C++ to students from 12 high schools in Ottawa. I helped the department of Systems and Computer Engineering in outreach activities by demonstrating robotics projects.

Interests

- Amateur Radio, Advanced License VA3AXB
- Google CodeJam, Facebook Hacker Cup, IEEE Extreme Programming - I am not a competitive programmer, but I enjoy participating in programming competitions.

Research

Publications

Amente Bekele, Shermeen Nizami, Y.S. Dosso, Cheryl Aubertin, Kimberley J. Greenwood, JoAnn Harrold, and J.R. Green. Real-time Neonatal Respiratory Rate Estimation using a Pressure-Sensitive Mat. In *Proc. of IEEE Int. Symp. Med. Meas. Appl. (MeMeA), Rome, Italy*, 2018.

Amente Bekele, Joe Samuel, Shermeen Nizami, Amna Basharat, Randy Giffen, and James R Green. Ontology Driven Temporal Event Annotator mHealth Application Framework. In *CASCON*, 2018.

Yasmina Souley Dosso, Amente Bekele, and James R Green. Eulerian Magnification of Multi-Modal RGB-D Video for Heart Rate Estimation. In *Proc. of IEEE Int. Symp. Med. Meas. Appl. (MeMeA), Rome, Italy*, 2018.

Shermeen Nizami, Amna Basharat, Arsalan Shaukat, Uzair Hameed, Syed Ali Raza, Amente Bekele, Perry Randall Giffen, and James Robert Green. CEA: Clinical Event Annotator mHealth Application for Real-time Patient Monitoring. *Proc. of 40th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC), Honolulu, HI, USA*, (May), 2018.

Shermeen Nizami, Amente Bekele, Mohamed Hozayen, Kim Greenwood, Joann Harrold, and James R. Green. Comparing time and frequency domain estimation of neonatal respiratory rate using pressure-sensitive mats. *2017 IEEE International Symposium on Medical Measurements and Applications, MeMeA 2017 - Proceedings*, pages 239–244, 2017.

Shermeen Nizami, Amente Bekele, Mohamed Hozayen, Kimberley J. Greenwood, Joann Harrold, and James R. Green. Measuring uncertainty during respiratory rate estimation using pressure-sensitive mats. *IEEE Transactions on Instrumentation and Measurement*, 67(7):1535–1542, 2018.

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