Alemayehu Solomon Abrar
(Curriculum Vitae)

Last Update: May 16, 2019

McKelvey School of Engineering
Washington University in St. Louis
Green Hall 0161, One Brookings Drive
St. Louis, MO 63130

Tel: (801) 386-6100
alemayehusolomon@wustl.edu
https://aleksol.github.io

I. RESEARCH INTERESTS

RF Sensing Networks: *including systems and methods for inexpensive, bandwidth-efficient RF sensing which can be used in smart building or smart city applications.*

II. EDUCATION

Ph.D. –Electrical Engineering, Washington University in St. Louis, USA 01/2019 - 09/2019 (Expected)
Dissertation: Improving RF Sensing for Smart Health Applications
Advisor: Neal Patwari
– Electrical and Computer Engineering, University of Utah, USA 08/2015 - 12/2018
Transferred to Washington University in St. Louis

M.Sc. –Electrical and Computer Engineering, University of Utah, USA 08/2015 - 12/2018

B.Sc. –Electrical Engineering, Addis Ababa University, Ethiopia 09/2007 - 07/2012
Thesis: Vehicle Fleet Tracking System

III. EXPERIENCE

Graduate Research Assistant
SPAN lab , Washington University in St. Louis, MO, USA 01/2019 - present

Graduate Research Assistant
SPAN lab , University of Utah, UT, USA 01/2016 - 12/2018

Senior Engineer
Sixth Sensing LLC, UT, USA Summer 2018

Graduate Teaching Assistant
Dept. of Electrical & Comp. Eng., Univ. of Utah, UT, USA 01/2015 - 05/2016

Assistant Lecturer
AAiT, Addis Ababa University, Addis Ababa, Ethiopia 10/2012 - 07/2015

Embedded Software Engineer
NBT Engineering, Addis Ababa, Ethiopia 09/2014 - 05/2015

Intern
Information Network Security Agency, Addis Ababa, Ethiopia 02/2011 - 07/2011

IV. AWARDS & HONORS

- **Runner up**. *"Sixth Sensing,"* Bench to Bedside Competition, Salt Lake City, UT, USA, April 2018. ($15000)

- **Addis Ababa University Gold Medal**. *"Outstanding Student of Class of 2012," Addis Ababa University*, Addis Ababa, Ethiopia, July 2012.

V. PUBLICATIONS

JOURNAL AND MAGAZINE ARTICLES

J1. "RSS Models for Respiration Rate Monitoring,"
Hüseyin Yiğitler, Ossi Kaltiokallio, Roland Hostettler, **Alemayehu Solomon Abrar**, Riku Jäntti, Neal Patwari and Simo Särkkä, *IEEE Transaction on Mobile Computing*, DOI: 10.1109/TMC.2019.2897682, appeared online 5 Feb. **2019**.

CONFERENCE AND WORKSHOP PROCEEDINGS

C5. "Quantifying Interference Assisted RSS Surveillance Attacks,"
Alemayehu Solomon Abrar, Neal Patwari, Aniqua Baset, Sneha Kumar Kasera, (under review).

C4. "Experience: Cross-Technology Radio Respiratory Monitoring Performance Study,"
Peter Hillyard, Anh Luong, **Alemayehu Solomon Abrar**, Neal Patwari, Krishna Sundar, Robert Farney, Jason Burch, Christina A. Porucznik, and Sarah Hatch Pollard, *Proceedings of the 24th Annual International Conference on Mobile Computing and Networking* **(MobiCom 2018)**, Pages: 487-496, New Delhi, India, **2018**.(**22.4% acceptance rate**)

C3. "A Stitch in Time and Frequency Synchronization Saves Bandwidth,"
Anh Luong, Peter Hillyard, **Alemayehu Solomon Abrar**, Charissa Che, Anthony Rowe, Thomas Schmid, and Neal Patwari, *17th ACM/IEEE International Conference on Information Processing in Sensor Networks* **(IPSN 2018)**, Pages: 96-107, Porto, Portugal, April **2018**.(**26.5% acceptance rate**)

C2. "Poster: Link Line Crossing Speed Estimation with Narrowband Signal Strength,"
Alemayehu Solomon Abrar, Anh Luong, Peter Hillyard, Neal Patwari, *Proceedings of the 23rd Annual International Conference on Mobile Computing and Networking* **(MobiCom 2017)**, Snowbird, Utah, USA, **2017**.

C1. "RSS Step Size: 1dB is not Enough!,"
Anh Luong, **Alemayehu Solomon Abrar**, Thomas Schmid, Neal Patwari, *3rd ACM Workshop on Hot Topics in Wireless* **(Hotwireless 2016)**, Pages: 17-21, New York, USA, **2016**.

TECHNICAL REPORTS

R2. "Save Our Spectrum: Contact-Free Sensing Using Single Carrier Radio,"
Alemayehu Solomon Abrar, Anh Luong, Peter Hillyard, Neal Patwari, arXiv.org Technical Report, arXiv:1811.10129 [eess.SP], posted 26 November **2018**.

R1. "Comparing Respiratory Monitoring Performance of Commercial Wireless Devices,"
Peter Hillyard, Anh Luong, **Alemayehu Solomon Abrar**, Neal Patwari, Krishna Sundar, Robert Farney, Jason Burch, Christina A. Porucznik, and Sarah Hatch Pollard, arXiv.org Technical Report, arXiv:1807.06767 [eess.SP], posted 18 July **2018**.

VI. TEACHING EXPERIENCE

Graduate Teaching Assistant, Dept. of Elect. & Comp. Eng., Univ. of Utah 08/2015-05/2016

- **ECE 3300 - Fund. of EM & Transmission Lines** (Fall 2015)
- **ECE 3500 – Intro. to Signals & Systems** (Fall 2015)

Assistant Lecturer, School of Elect. and Comp. Engineering, Addis Ababa University 2013-2015

- **ECEG 2113 - Probability and Random Process** (Fall 2014)
- **ECEG 2102 - Electromagnetic Fields** (Spring 2014)

VII. SKILLS

- **Programming:** C, C++, Java, Bash, Python, MATLAB, Verilog, PHP, SQL, HTML, Javascript, CSS.
- **Tools:** GNU Radio, MATLAB & Simulink, OpenCV, LabVIEW, Altium, Quartus, HFSS, CADFEKO, OpenStack, PhantomNet, Visual Studio.
- **Electrical:** Analog and digital circuit design, embedded system development.
- **Operating Systems:** Mac, Windows, Linux
- **Languages:** Fluent in English, native in Amharic

VIII. SERVICES

- **Invited Reviewer**. IEEE Transactions on Biometrics, Behavior, and Identity Science, November 2018.

IX. PERSONAL INFORMATION

- Gender: Male
- Date of Birth: January 25, 1989
- Place of Birth: Addis Ababa/Ethiopia