Salah Assana

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EDUCATION

Massachusetts Institute of Technology, Cambridge, Massachusetts, USA

- Master of Science — Sep 2018 – May 2020
  - **Thesis:** Contactless Cardiovascular Activity Monitoring Using mmWaves
  - Supervisors: Dr. Fadel Adib and Dr. Rosalind Picard
  - Cumulative GPA: 4.9 / 5.0 (summa cum laude)

University of Virginia, Charlottesvile, Virginia, USA

- Bachelor in Computer Science — Sep 2015 – May 2017
  - **Thesis:** Privacy-preserving Image Processing with Binocular Thermal Cameras
  - Supervisors: Dr. Kamin Whitehouse and Dr. David Evans
  - Cumulative GPA: 3.87 / 4.0 (summa cum laude)

Northern Virginia Community College, Sterling, Virginia, USA

- Associate in Computer Science — Sep 2013 – May 2015
  - Cumulative GPA: 3.84 / 4.00 (summa cum laude)

RESEARCH & INDUSTRY EXPERIENCE

Cardiac MR Center, Harvard Medical School

- Research Assistant II — Jan 2021 – Current
  - Increased the speed of a free-breathing, free-running perfusion sequence by 1000% using deep learning.
  - Deployed ML models on Siemens scanner for real-time data processing using FIRE framework.
  - Collaborated with MRI technicians to add-on experimental scans to clinical patients.

Media Lab, Massachusetts Institute of Technology

- Research Assistant — Sep 2018 – Aug 2020
  - **Key achievement:** Developed a novel mmWave sensor capable of contactless cardiovascular activity monitoring.
  - Used C++ Boost library to enable the use of multiple sensors concurrently and allow for real-time data evaluation.
  - Used MATLAB to filter signal and analyze the cardiac data for signs of heart illnesses.

Booz Allen Hamilton, Tysons, Virginia, USA

- Software Engineer — Sep 2017 – Aug 2018
  - Worked as full stack developer on a scrum team with C# and JavaScript libraries like AngularJS & Backbone.
  - Used Hadoop and Hive to build a scalable distributed data lake on AWS.
  - Built a abstractive text summarization tool using TensorFlow, NumPy, Pandas and Pyrouge.

Link Lab, University of Virginia

- Research Assistant — Sep 2015 – May 2017
  - **Key achievement:** Introduced a new doorway sensor capable of determine travel direction with 99.7% accuracy.
  - Wrote multi-threaded C driver to increase speed of sensor by 3000% & reduced energy consumption by 50%.
  - Develop optical flow based tracking algorithm robust to illumination changes & background movement in Python.

SELECT PUBLICATIONS

[1] (Submitted) **S. Assana**, et al., "Radial perfusion cardiac magnetic resonance imaging using deep learning image reconstruction," in *International Society for Magnetic Resonance (**ISMRM**)* . 2022

[2] M. Morales, **S. Assana**, et al., "An Inline Deep-Learning Based Free-Breathing and ECG-Free Cine for Exercise CMR," in *Society for Cardiovascular Magnetic Resonance (**SCMR**)*, . 2022

[3] R. Guo, H. El-Reiwady, **S. Assana**, et al., "Accelerated Cardiac T1 Mapping in Four Heartbearts with Inline MyoMapNet: A Deep Learning Based T1 Estimation Approach.," in *Journal of Cardiovascular Magnetic Resonance (**JCMR**)*, . 2021

[4] A. Fahmy, I. Csecs, **S. Assana**, et al., "An Explainable Machine Learning Approach Reveals Prognostic Significance of Right Ventricular Dysfunction in Non-ischemic Cardiomyopathy," in *Journal of the American College of Cardiology (**JACC**)*, . 2021

[5] U. Ha, **S. Assana**, and F. Adib, "Contactless Seismocardiography via Deep Learning Radars," in *The 26th Annual International Conference on Mobile Computing and Networking (**MobiCom**)*, London, United Kingdom, Sep 2020.

AWARDS & SCHOLARSHIPS

- **Louis T. Rader Undergraduate Research Award**, University of Virginia — May 2017
  Annually awarded to an undergraduate researcher who has demonstrated research excellence.
- **Phi Beta Kappa**, University of Virginia — Apr 2017
  The Phi Beta Kappa Society is the nation's most prestigious academic honor society, founded in 1776.