

# Abenezer Wudenhe

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## RESEARCH INTEREST

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- Accelerator hardware including GPGPU, TPU, FPGA, and embedded devices
- Application specific domains including machine learning, data mining, and bioinformatics
- Memory architecture for accelerating data dependent application and near/in data processing

## EDUCATION

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**University of California, Riverside (UCR)** PhD (Computer Science)

- SMART Fellow Expected: May 2024
- Chancellor's Distinguished Fellow
- GAANN Fellow

**University of Maryland, Baltimore County (UMBC)** BS (Computer Engineering)

- Meyerhoff Scholar May 2018 (Cum Laude)
- NSA Scholar

## PROFESSIONAL EXPERIENCE

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**ARMY CYBER DWD Internship** 2019 May – Aug 2019

***Software Engineering Intern.***

Assess new technologies for ARMY Big Data Platform. Determine potential and cost of machine learning application Explore Amazon Kinesis tool for reduction of database overhead.

**Extreme Storage and Computer Architecture Lab (ESCAL)** 2018 Aug – Present

***Graduate research assistant to Dr. Hung-Wei Tseng.***

Conduct research with a focus on memory acceleration and hardware software co-design. Investigate new accelerator for domain specific application. Extract and evaluate potential for new architecture in unanticipated applications or use cases.

**University of Michigan Lab 4PROGRESS REU** 2017 May - Aug 2017

***Undergraduate research assistant to Dr. Chad Jenkins***

Applied cluster computing methods to robotic visualization techniques and object recognition. Utilized computer networking and Message Passing Interface (OpenMPI) for applications Developed GPU accelerated image rendering using Nvidia drivers and CUDA programing.

**Electroencephalograph (EEG) Study on Image Formation** 2016 May - Aug 2016

***Undergraduate research assistant to Dr. Fow-Sen Choa***

Examined a new approach to link single measurement with behaviors that can monitor brain functions reproducibly without repeating measurements. Organized data management from experiments. Programed MATLAB model for 3D graph plotting and analysis.

## CONFERENCE PRESENTATIONS

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**A. Wudenhe**, Jinyoung Choi, Yu-Ching Hu, Hung-Wei Tseng. Poster presentation delivered at the Non-Volatile Memory Workshop (NVMW19), San Diego, CA, March 10-12, 2019.

**A. Wudenhe**. Three-dimensional EEG signal tracking for reproducible brain activity monitoring. Poster presentation delivered at the Institute of Electrical and Electronics Engineers (IEEE) Signal Processing in Medicine and Biology Symposium (SPMB16), Philadelphia, PA., December 3, 2016.

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**A. Wudenhe**, F. Avila-Soto, A. Beri, E.Valenzuela. Parallelization for Fast Image Reconstruction using the Stochastic Origin Ensemble Method for Proton Beam Therapy. Poster presentation delivered at the UMBC Summer Undergraduate Research Fest (SURF), Baltimore, MD, August 5, 2015.

## **PUBLICATION**

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**A. Wudenhe**, Hung-Wei Tseng. TPUPoint: Automatically Characterizing Hardware Accelerated Data Center Machine Learning Program Behavior. In IEEE International Symposium on Performance Analysis of Systems and Software, ISPASS 2021, 2021.

**A. Wudenhe**, F. S. Choa, Q. Meng. Three-dimensional EEG signal tracking for reproducible brain activity monitoring. IEEE Xplore Digital Library 2017. 7846869.

Q. Meng, D. Gupta, **A. Wudenhe**, X. Du, L. Hong, F. Choa. Three-Dimensional EEG Signal Tracking for Reproducible Monitoring of Self-Contemplating Imagination. Advances in Science, Technology and Engineering Systems Journal, vol. 2, no. 3, pp. 1634-1646 (2017).

## **TECHNICAL SKILLS**

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- Experience programming in **C, C++, python, CUDA**, html, MPI, php, Arduino, OpenMP, Open MPI, TensorFlow, Sklearn, Javascript, NodeJS
- Experience writing technical documents using LaTeX, BibTex, Word
- Experience with Xilinx Design Tool, MATLAB, Cadence's Allegro Design Entry CIS, Atmel Studio

## **PROFESSIONAL ACTIVITIES**

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### **IEEE President**

2017 – 2018

- Conduct and coordinate meetings between Baltimore IEEE branch
- Supervise workshops and socials
- Facilitate outreach in STEM fields to minority schools in Baltimore
- Lead circuit design workshops

## **REFERENCES**

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