

# Arpad Attila Voros

## *Curriculum Vitae November 13<sup>th</sup>, 2020*

### CONTACT INFORMATION

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### SKILLS

- **Computer Languages** — C, C++, Python, MATLAB, Verilog, Java, JavaScript, R, NodeJS, Perl, SQL, VBA
- **Computer Skills** — LTSpice, PSpice, SolidWorks, Autodesk Fusion 360 & Inventor, MongoDB, Adobe InDesign
- **Hands-On Skills** — rapid prototyping, extensive electronics laboratory experience
- **Relevant graduate courses** — ECE 542: Neural Networks, ECE 513: Digital Signal Processing, ECE 560: Embedded Systems Architecture, ECE 514: Random Processes, MA 405: Linear Algebra, ECE 498: Special Projects in ECE
- **Interests** — FPGA & HDL, deep learning, applied machine learning, data analytics & visualization, digital signal processing, precision engineering, optics, embedded systems
- **Languages** — English (fluent), Hungarian (fluent), German (conversational proficiency)

### ACADEMIC HISTORY

#### North Carolina State University

*Bachelor of Science in Electrical & Computer Engineering*  
Major GPA: 3.91/4.00 Cum. GPA: 3.70/4.00

Raleigh, North Carolina  
*August 2017 - May 2021*

#### North Carolina State University

*Masters in Electrical Engineering*  
Accelerated Masters/Bachelors Program at NCSU

Raleigh, North Carolina  
*August 2020 - December 2021*

### PROFESSIONAL EXPERIENCE

#### Senior Design Team Lead

*North Carolina State University ECE Department, U.S. Army Research Office*

Raleigh, North Carolina  
*August 2020 – Present*

- Designing, simulating, and prototyping an acoustic deterrence device for the U.S. Army Research Office to prevent African elephants from impinging sub-Saharan African farmland to decrease human-elephant conflict.
- Acoustic simulations of various directional sound propagation techniques made using k-wave library in MATLAB
- Electrical simulations of various modulation techniques to minimize harmonic distortion made using LTSpice

#### Undergraduate Researcher & Student

*Reutlingen Hochschule*

Reutlingen, Germany  
*January 2020 – March 2020*

- Optimized Simulink and MATLAB simulations of a hybrid energy system, consisting of energy storage devices (batteries & TES) and energy transfer units (PVs & heat pumps), according to the Klucher weather model
- Ensured Simulink and MATLAB simulations were identical by finding mistakes of both models

#### Transmission Engineering Summer Intern

*Duke Energy Carolinas*

Charlotte, North Carolina  
*May 2019 – August 2019*

- Created tool using VBA in MS Access which autogenerates SQL queries to find delta in external modeling data, consisting of 5 of the major neighboring energy distributors with thousands of line-connections each.
- Used said VBA tool to automate update of Duke's modeling system.
- Wrote a script in Perl which generated over 100 clean one-line displays for unmodeled 230kV-500kV lines.

#### Winter Break Intern

*Bravo Team LLC*

Charlotte, North Carolina  
*December 2018 – January 2019*

- Worked on translating VB shot peening simulation for aerospace product manufacturer to Qt to be furthered in development on mobile platforms.
- Selected precision parts for pick-and-place SCARA robot, commissioned by same aerospace product manufacturer
- Constructed CAD models multiple variations of said SCARA robot in SolidWorks

#### Undergraduate Researcher

*North Carolina State University & Duke University Department of Physics*

Raleigh, North Carolina  
*September 2017 – August 2018*

- Worked on the nEDM intercollegiate experiment for the DOE. Worked at NCSU and Duke under ORNL.

- Utilized multi-axis translational stage to displace position of a wavelength shifting fiber relative to SiPM to determine precision installation requirement of “fiber-SiPM” coupling. Maximum tolerance of mounting to be used in Monte-Carlo simulation to estimate rigidity specifications of sensor containment unit used in the nEDM experiment at ORNL.

#### **Undergraduate Researcher & Team Member**

*University of North Carolina at Charlotte*

Charlotte, North Carolina

May 2017 – August 2017

- Designed a desktop CNC milling machine for high speed machining.
- Utilized polar coordinates opposed to Cartesian in machine design. Precision rotary table was used to reduce bed size.
- Created CAD models, conducted stress tests using Autodesk Inventor, and partook in thousand-dollar decision-making.

#### **Independent Researcher & Team Lead**

*Intel International Science and Engineering Fair*

Waxhaw, North Carolina

November 2016 – May 2017

- Lead an independent research team of 3 to reduce the cost of conventional muon scattering tomography by 96%.
- Acquired provisional patent for novel approach, which utilizes volumetric scintillators and a trilateration algorithm.
- Built a semi-functional prototype. Sensing provided by SiPM arrays coupled with scintillating. Created Monte-Carlo and signal-processing simulations using Java, MATLAB, and LTSpice.
- Responsible for thousands of dollars’ worth of equipment. No external funding of project was provided.

#### **PROJECTS**

For a full list with descriptions, figures, and interactivity, please see:

<https://arpadav.github.io/projects/>

#### **PRESENTATIONS**

- Voros, Arpad., Daino, Trevor., Kronovet, Michael. (2017, May). *PHYS024T – Muon Scattering Tomography: Utilizing Silicon Photomultiplier Arrays to Trilaterate Muon Multiple Coulomb Scattering Events*. Intel International Science and Engineering Fair. Los Angeles, California.
- Voros, Arpad., Cook, Hunter., Alamro, Nwaf., Fitts, Greyson. Pyrtle, Morgan. (2020, November). *Senior Design Day Team 21 – Vectorized Acoustic Deterrence of Elephants Research*. North Carolina State University. Raleigh, North Carolina

#### **AWARDS & HONORS**

*Perfect Pitch Award 1st Place Winner*

*North Carolina State University – November 2020*

- Senior design team received first place of over 140 students in having the best poster and best three minute pitch in describing their project

*ASPE 32<sup>nd</sup> Conference NSF Grantee*

*ASPE - September 2017*

- Received grant from National Science Foundation to cover attendance costs for the 32nd Annual ASPE (American Society for Precision Engineering) Conference at Charlotte, NC in November 2017

*Third Award, Physics and Astronomy, Intel ISEF*

*Society for Science & the Public – May 2017*

- Third Award at Intel ISEF for \$1,000 in the Physics and Astronomy category

*Intel Excellence in Computer Science Award*

*Intel Foundation – February 2017*

- Received recognition and a prize of \$200 for the original development of a Monte Carlo simulation in the Java and MATLAB languages to model the efficacy of a novel approach to conducting muon scattering tomography. The simulation modeled the propagation of muons, their angular distribution, through scintillating prisms, and through high-Z material cross-sections, real-time electronic signal read-out of SiPM, and thermal noise characteristics of SiPM

*1st, UNC Charlotte Excellence in Physics*

*Physics Department at UNC Charlotte – February 2017*

- Received 1st place distinction and a prize of \$100 on behalf of the demonstration of sound physics concepts in the design, construction, calibration, and simulation of a novel technique for conducting muon scattering tomography

*Region 6 NCSEF 2017 1st Place Winner, ISEF Finalist*

*The Center for STEM Education – February 2017*

- Received nomination and named finalist for the Intel International Science and Engineering Fair 2017 at Los Angeles, California.

#### **PROFESSIONAL ASSOCIATIONS**

American Society for Precision Engineering

*October 2017 – October 2018*

Science National Honors Society

*September 2014 – June 2017*

Mu Alpha Theta

*August 2014 – June 2017*

German Honors Society

*August 2013 – June 2017*

#### **REFERENCES**

Available upon request