

# GUNNAR NELSON

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## EDUCATION

### MASTER'S DEGREE (MS) COMPUTER SCIENCE & APPLICATIONS

2020-2022

VIRGINIA TECH COLLEGE OF ENGINEERING GPA: 3.75

### BACHELOR OF SCIENCE (BS) COMPUTER SCIENCE 2015-

2019

VIRGINIA TECH COLLEGE OF ENGINEERING

## EXPERIENCE

### SOFTWARE ENGINEER-AI/3D VISION/IOS MOBILE

GRAINGER-CHICAGO, IL | AUGUST 2022-DECEMBER 2022

- Focus on computer vision and machine learning applications for photogrammetry on Swift iOS platforms
- Enriching Mobile Application with MLCore and Reality Kit to create point cloud 3D spaces for machine learning scientists/engineers
- Focus on point cloud researching
- Application development in SwiftUI
- Update features in Agile environment to update features for Graingers Image Recognition

### LEAD SOFTWARE ENGINEER

NERVE+INC-SAN FRANCISCO, CA | JAN 2022-JULY 2022

- Performed instance segmentation for 5 CNN ML models to be tested and refined for public domain and crowdsource annotation. Responsible for dataset creation, annotation, filtering, and testing/deploying 5 generic ML models into video game simulation. Writing ML models in python, and surgical simulation environment in C++.
- Worked on 3D VR environment for pharmaceutical data analysis and Human-AI interaction workflow environment built with Unreal Engine 5.0

### LEAD SOFTWARE ENGINEER-IOS

VAROS-WASHINGTON, DC | JAN 2021- DEC 2021

- Responsible for high scale team development of technical solutions and integration of AR/VR development based on CAD designed anatomy to aid in patient education and lead successful launch of VAROS App
- Published in the Journal of Surgical Endoscopy
- Tech stack: Blender, Unity, Apple Reality Converter, and Apple API AR integration

### AI SOFTWARE ENGINEER RESEARCH INTERN

COMMONWEALTH CYBER INITIATIVE-WASHINGTON, DC | MARCH 2021- JULY 2021

- Responsible for integrating Augmented Reality Design into the Microsoft HoloLens 2
- perform configurations of Hidden Markov Models for public domain data for third part applications
- Worked with hands on GPU CUDA, and PyCUDA for performance on ChesXNet ML models
- Supervised and educate colleagues on the basis of Raspberry Pi development, Linux/Unix OS, and lead on projects

### PEPPER ROBOTICS SOFTWARE LEAD-GRADUATE RESEARCH ASSISTANT

MIND MUSIC MACHINE LAB-BLACKSBURG, VA | AUG 2020- MAY 2021

- Lead two research projects on human-emotive robot interaction and the Mind Music Machine Lab's Robot Theater Elementary school program
- Developed custom movements in Kotlin and Java based Android libraries, with 135 Pepper robot movements
- Performed Computer Vision and Audiotory tasks for Human-Robot Emotion
- Supervised undergraduate students in coding robot programs
- Managed equipment for Softbank's Pepper and Nao humanoid robotics equipment

### FLUTTER-REACT NATIVE-SQL SOFTWARE ENGINEER

IMAWARE, HOUSTON, TX | JAN 2020- JULY 2020

- Construct React-Native based App in JavaScript for IOS/Android platforms, for transactions between users
- Perform SQL queries on PostgreSQL
- Develop React Based Application

### SOFTWARE ENGINEERING RESEARCHER

CYBERBIOSECURITY INITIATIVE-VIRGINIA TECH-BLACKSBURG, VA | AUG 2019-DEC 2019

- Construct TensorFlow based classifier, and creating datasets from scratch, to distinguish between third world country fishing boats and countries patrol boats to minimize cases of piracy, using the MobileNet CNN architecture to be applicable for Android devices.

## PUBLICATIONS & PRESENTATIONS

- **IDENTIFYING CURRICULUM GAP IN FUNDAMENTALS OF ROBOTIC SURGERY AND FUNDAMENTAL SKILLS OF ROBOTIC SURGERY: HANDLING ADVERSE EVENTS**  
JOURNAL OF SURGICAL ENDOSCOPY | APRIL 2018  
WORLD CONGRESS OF ENDOSCOPIC SURGERY
- **LAPAROSCOPIC RELEASE OF MEDIAN ARCUATE LIGAMENT**  
JOURNAL OF SURGICAL ENDOSCOPY | APRIL 2019  
SOCIETY OF AMERICAN GASTROINTESTINAL & ENDOSCOPIC SURGEONS
- **MINIMIZING ROBOTIC SURGERY ADVERSE EVENTS THROUGH MACHINE LEARNING**  
JOURNAL OF SURGICAL ENDOSCOPY | MARCH 2021  
JAPANESE SOCIETY OF ENDOSCOPIC SURGERY/WORLD CONGRESS OF ENDOSCOPIC SURGERY
- **ACM WORKS OF WONDER SHOWCASE-A PARADIGM SHIFT IN MEMORIALIZATION: LEARNING AND ENGAGEMENT THROUGH 3D VIRTUAL MUSEUMS**  
LIBERATION WAR MUSEUM BANGLADESH-MARCH 2021
- **REDEFINING THE DIGITAL PARADIGM FOR MUSEUMS-CONSIDERING THE COVID-19 PANDEMIC**  
LECTURE NOTES IN COMPUTER SCIENCE (LNCS) | JULY 2021  
INTERNATIONAL CONFERENCE ON HUMAN-COMPUTER INTERACTION
- **KNOWLEDGE IS POWER: LINKING AUGMENTED-REALITY WITH 3D PRINTED INTERNAL ORGANS TO IMPROVE MEDICAL EDUCATION AND INCREASE PATIENT INVOLVEMENT IN CLINICAL STUDIES:**  
JOURNAL OF SURGICAL ENDOSCOPY | AUGUST 2021  
SOCIETY OF AMERICAN GASTROINTESTINAL & ENDOSCOPIC SURGEONS

## VOLUNTEERING

### **STEM CLASSROOM ASSISTANT**

PRICES FORK ELEMENTARY-BLACKSBURG, VA | AUG 2020- PRESENT

- Teaching 3rd-5th graders about robotics and AI fundamentals.
- My mission is to inspire

### **ALLIED MEMBER**

BLACK IN AI | JAN 2021- PRESENT

- Organize and host monthly zoom session to discuss issues on system racism and provide an inclusive community to technology

### **ALLIED HEALTH MEMBER**

SOCIETY OF AMERICAN GASTROINTESTINAL AND ENDOSCOPIC SURGEONS (SAGES) | JAN 2021- PRESENT

- Mentor high school students with advice for pre-medical studies and aid in SAGES' Mini Medical School Bootcamp

## SKILLS

- iOS
- SwiftUI
- C++
- Python
- GPU Languages: CUDA and Pytorch
- AI
- Machine Learning
- Tensor flow
- Scikit learn
- Java
- Javascript
- HTML
- CSS
- React Native
- Node JS
- Android
- Unity Development
- Research
- Mentorship
- Outreach
- Entrepreneurship
- Team Building
- Teaching
- Robotics
- Linux OS
- Microsoft Office
- Operating Systems
- Swift

## LINKS TO PORTFOLIO OF WORK



LINKED-IN



GOOGLE SCHOLAR



WEBSITE



THESIS:  
XMARCUS



GITHUB



TWITTER