

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

TEAM LEAD SOFTWARE ENGINEER

NERVE+INC-SAN FRANCISCO, CA | AUG 2021-PRESENT

- Responsible for publishing SaaS applications with recurring revenue subscription and ad based revenue subscription modeling
- Update features in Agile environment
- 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
- Enhancing Mobile Application MVPs with MLCore and Reality Kit to create point cloud 3D spaces for machine learning scientists/engineers
- Developed unreal Engine MVPs for institutional investing and seed round funding for robotic surgical simulation for cross platform applications on console, PC, and mobile
- Conducted photogrammetry research on point cloud systems for the iOS environment to extract data points from the point clouds and integrate in the unreal engine environment
- Completed 72 Swift UI features
- Tech stack: iOS, Unreal Engine, Bitbucket, Git, C++, Bootstrap, Flutter, Oculus Development Hub, Apple Reality Converter, and Apple API AR, CoreML, Intel OpenVino, SwiftUI, Blender, Unity, Git, Bitbucket, Kubernetes

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 iOS App
- Focused on monetizing Augmented Reality software using the freemium business model
- Integrated Augmented Reality creations into the SwiftUI framework
- Responsible for rendering, shading, lighting, for AR objects in both Unity and Blender
- Published academic paper 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
- Tech Stack: Cuda, PyCuda, Pytorch, Microsoft Azure, Unity, Blender, Embedded 5G Testbeds, Linux

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 Auditory tasks for Human-Robot Emotion
- Supervised undergraduate students in coding robot programs
- Managed equipment for Softbank's Pepper and Nao humanoid robotics equipment
- Tech Stack: ROS, Linux, Android OS, SoftBank ROS Software, Python, C++/C based Embedded Systems

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
- Tech Stacks: React, React Native, LucidChart, MySQL, PostgreSQL

SOFTWARE ENGINEERING RESEARCHER

SYNERGY LAB-VIRGINIA TECH-BLACKSBURG, VA | JAN 2019-DEC 2019

- Constructed machine learning models from the UNET Architecture for converting CT scans in MRI images built with tensorflow, sci-kit learn, matplotlib, and pandas
- Showcased data plots for CT sonograms using Tensorflow, Sci-kit for medical and non medical applications, including financial projections and real estate data plots
- Performed instance segmentation of robotic surgical arm for binary classification
- Tech Stack: Python, Tensorflow, CUDA, Sci-kit Learn, Pandas, Matplotlib, Machine Learning, Research, Git

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-MAY 2022

- 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

- C++
- Python
- GPU Languages: CUDA and Pytorch, PyCuda
- AI
- Machine Learning
- AI Packages: Tensor flow, Scikit Learn, Pandas, Matplotlib
- Robotics
- Embedded Systems
- ROS
- Scikit learn
- Java
- Scala
- Backend: GCP, AWS, MongoDB
- HTML, CSS, Javascript
- Golang
- Collaboration: Git, Bitbucket, Kubernetes
- Blockchain: Solidity, Smart Contract, NFTs, Minting blockchain
- iOS, SwiftUI
- React, React Native
- Node JS
- Android
- Unity Development
- Research
- Mentorship
- Outreach
- Entrepreneurship
- Team Building
- Teaching
- Linux OS
- Microsoft Office
- Operating Systems

LINKS TO PORTFOLIO OF WORK



LINKED-IN



GOOGLE SCHOLAR



WEBSITE



THESIS: XMARCUS



GITHUB



TWITTER