

GUNNAR NELSON

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EDUCATION

MASTER'S DEGREE (MS) COMPUTER SCIENCE & APPLICATIONS

2020-2022

VIRGINIA TECH COLLEGE OF ENGINEERING

BACHELOR OF SCIENCE (BS) COMPUTER SCIENCE

2015-2019

VIRGINIA TECH COLLEGE OF ENGINEERING

EXPERIENCE

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 computer vision instance segmentation on 5 CNN Machine Learning (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 simulation of 3D model organs. 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 MVPs for institutional investing and seed round funding for robotic surgical simulation for cross platform applications on console, PC, and mobile development, and approved for publishing on the following application stores: App Store, Google Play Store, Xbox Store, Playstation Store, Steam, Microsoft Store, and Oculus Hub
- Mobile: Self published 21 SwiftUI Application, Completed 72 SwiftUI features, photogrammetry research on point cloud systems for the iOS environment to extract data points from the point clouds and integrate in the Unreal Engine and Unity environments
- 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, Kubernetes, Google AdMob SDK, Ad Revenue, in-App Purchasing, StoreKit

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 party 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.

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

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