OLUWATOSIN OSENI

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EDUCATION

Covenant University, Nigeria
Bachelor of Engineering in Mechanical Engineering **SEPT 2022**

Research Interests: Robotics, RL/ Safe RL, Deep Learning, VSLAM, State estimation, Control, Optimization

PUBLICATIONS

Shengjie Wang, Fengbo Lan, Yuxue Cao, Oluwatosin Oseni, Tao Zhang (Under Review). "A RL-based Policy Optimization Method Guided by Adaptive Stability Certification". **[Link]**

RESEARCH PROJECTS

Adaptive Lyapunov-Based Actor Critic (ALAC) **[Link]**
- A RL-based Policy Optimization Method Guided by Adaptive Stability Certification.
- Algorithm developed that utilizes a Lyapunov-based Actor-Critic Method to guarantee the stability of the control system.

Safe-PO-Baseline (Safe-RL)
- Currently developing safe based algorithms, implementation including mainstream CMDP-based algorithms as well as algorithms developed by the team.We provide a unified framework and interface for these algorithms, which helps people to fairly compare the performance of different algorithms

Safe Panda Gym **[Link]**
- Modification to the Panda gym environment to experiment and develop Multi Task Safe-RL algorithms, adding constraints, and more complex tasks for agents to learn transferable optimal and safe policies.

SpaceRobotEnv (Tsinghua-Space-Robot-Learning-Group) **[Link]**
- SpaceRobotEnvPointCloud-Vo an env version of SpaceRobotEnv with point cloud used as observation space
- Reinforcement learning algorithms implementation and experimentations on different models and performance comparisons (PPO, SAC, DDPG, TRPO) for trajectory planning.

Visual-SLAM and Visual-Slam PY **[C++, Python]**
- Implementation of several concepts in Visual Slam like Visual Odometry, optical flow, bundle adjustment, dense reconstruction, and a final Stereo VSLAM Project

CxrCovidClassify - Double Transfer learning for Covid Prediction on Mobile Devices **[Link]**
- A Pretrained Mobile-Net model was trained on a large dataset of X-rays on pneumonia to learn structure of X Ray images and is trained on a much smaller Covid X Ray dataset.

PROFESSIONAL EXPERIENCE

ALAT By Wema Bank - (Software Engineer / RPA Engineer) DEC 2021 - PRESENT
- Developed a Saas using Computer Vision and OCR that automates user authentication on banking platforms (KYC) which prevents downtime in manual user verification
- Utilized Machine Learning Models for customer segmentation to predict user behavior and suggest loan plans to users

JosPlay Africa (Machine Learning Engineer / AI Researcher) - (Contract Engineer) APR 2022 -JUN 2022
- Built ML models to categorize African genres of music with a pipeline including large models for all the genres and then specific models to confirm the confidence of the classification
- Developed CNN-based models for audio tasks like CNN-RNN-LSTM and CNN-Attention module architectures which successfully recommended songs to the users based on their history and similarity models

- Developed Auto Encoder - Decoder networks to serve as an alternative to MFCC and Spectrograms for feature extraction and compression of African music to accelerate training of future models and save space on data storage

Covenant University Center for Research, Innovation and Discovery - (Research Assistant) AUG 2020 - OCT 2020

- Partnered to design and program a soft robotic arm for harvesting tomatoes on a farm implementing YOLO for perception and object detection using Pytorch
- Partnered to design a soft robotic arm for harvesting tomatoes on a farm, developing the software to perform inverse kinematics and trajectory planning using YOLO algorithm and C++
- Simulated manipulator forward and inverse kinematic motions using python robotics toolbox
- Deployed Perception and Controls stack on a Raspberry PI

Leadway Assurance - (Software Engineer & App developer) APR 2019 - OCT 2019

- Collaborated with a fellow software engineer to develop an access control system, wherein my responsibilities included building a Mobile Android (JAVA) application and back-end web services with ASP.net Web API
- Built working APIs to interact with the database using C to control turnstiles and interface with QR Code Scanners, using company utilities included in the Access Control System.

ACTIVITIES

Hebron Motorsports, (Formula Student UK - System Design) MARCH 2021

Aided the competing covenant university formula student design team by brainstorming and advising on their vehicle's software and electronics needed to compete professionally.

HONORS AND AWARDS

Competitive Programming Competition (2021) ICPC Regionals JUNE 2021

Team Lead and Third place Runner up for both ***(ACPC) Africa and Arab Collegiate Programming Championship*** and ***(NCPC) Nigeria and Arab Collegiate Programming Championship.***

RELEVANT SKILLS

Languages: Python, C++, C#, Latex, Swift, Java, SQL, BASH
Machine Learning Frameworks: Pytorch, TensorFlow, Scikit-learn
CAD and Simulation: MuJoCo, PyBullet, Gazebo, SolidWorks, AutoCAD, AutoDesk Inventor
Operating Systems and Platforms: MAC Os, Linux, Windows, Arduino/ESP, Raspberry Pi
Other Technical Skills and Software: ROS1, Databases (MSSQL, MongoDB), Web-Dev BAckend(ASP.NET, Django/ Flask), Mobile development (Android, IOS), Computer Vision, Deep learning

CERTIFICATIONS

- Autodesk Certified User: Inventor
- CSWA -Additive Manufacturing

VOLUNTEER EXPERIENCE

Programming Tutor

- Taught a class on Introduction to Python and basics of Machine Learning in a programming Bootcamp hosted by students at Covenant University
- Volunteered in a program teaching game programming with SCRATCH programming language to kids. Ultimately, they form teams and compete for the best game and presentation.