Victor Aladele

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EDUCATION

Georgia Institute of Technology — ***Atlanta GA***
PhD in Electrical Engineering — *Aug 2016 - Present*
Anticipated Graduation — *Aug 2022*
Research focus — *Robotics and Machine Learning*

New Jersey Institute of Technology — ***Newark NJ***
B.S. in Electrical Engineering — *May 2016*
Minor in Applied Mathematics
Overall GPA: 3.76 (Magna Cum Laude)

PUBLICATIONS

- **V. Aladele** and S. Hutchinson, **Impedance-Based Collision Reaction Strategy via Internal Stress Loading in Cooperative Manipulation**, IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2021.
- **V. Aladele** and S. Hutchinson, **Collision reaction through internal stress loading in cooperative manipulation**, IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2020.
- Zafar, M., Mehmood, A., Khan, M., Zhang, S., Murtaza, M., **Aladele, V.**, Theodorou, E.A., Hutchinson, S. and Boots, B., 2018, November. **Semi-parametric Approaches to Learning in Model-Based Hierarchical Control of Complex Systems**. In International Symposium on Experimental Robotics (pp. 387-397). Springer, Cham.

WORK EXPERIENCE

Georgia Institute of Technology — ***Atlanta GA***
Graduate Research Assistant — Aug 2016 - Present

· PhD Advisor: *Seth Hutchinson, PhD*
· Dissertation Title: *Cooperative manipulation strategies for multi-robot and human-robot collaboration*

Royal Institute of Technology (KTH) — ***Stockholm, Sweden***
Visiting PhD Student — Aug 2021 - Jan 2022

· Host Advisor: *Danica Kragic Jensfelt, PhD*
· Research focus: Compensating for model errors in cooperative manipulation: A Decentralized Approach.
· Worked in Pybullet, using "Stable-Baselines" to train reinforcement learning agents to learn to compensate for model errors.

Google (Brain/Research) — ***Remote / Mountain View CA***
Research Intern — May 2021 - August 2021

· Worked on developing reinforcement learning solutions for high-speed robotics.
· Developed and implemented curriculum learning algorithms to improve robot learning.
· Implemented and trained different policy action spaces to improve performance of our robot.
· Writing unittests.

Blue River Technology (A John Deere Subsidiary) ***Remote / Sunnyvale CA***
Software Engineering Intern May 2020 - Aug 2020

- Worked on a team to develop software for cutting-edge *John Deere* machinery
- Worked in an agile-based development environment (Jira)
- Unittesting with google testing framework
- Worked with data serializing and deserializing frameworks such as: *Flatbuffers, Protocol buffers*
- GPU programming, *CUDA*
- Worked heavily with C++, including modern C++.
- Used Git with integrated testing (Jenkins) for version control

Bosch (Advanced Corporate Research), BSH Home Appliances ***Sunnyvale CA***
Robotics Software Intern May 2019 - Aug 2019

- Worked on implementing impedance control on a 6 DOF robotic arm for object insertion tasks.
- Worked with different C++ libraries such as, Rigidbody Dynamics Library (RBDL).
- Wrote action-client ROS nodes for switching controllers. For example, switching from a trajectory controller to an impedance controller.
- Worked with C++, version control (Git), Python and ROS.
- Worked with both simulation and hardware.

Massachusetts Institute of Technology ***Cambridge MA***
Research Intern June 2015 - Aug 2015

- **Advisors**: Daniela Rus *PhD*, Robert McCurdy, *PhD* **CSAIL**
- Designed and 3D printed gear pumps for hydraulically actuated robots.
- Worked with Autodesk Inventor to design CAD models that were converted to STL files for printing.

TECHNICAL STRENGTHS

Computer Languages	C++, Python
Scripting Languages	HTML, XML, MATLAB
Tools	Robot Operating System (ROS), Pytorch, Git, Autodesk Inventor, Pybullet, OpenAI gym, Gazebo, Blender, Jupyter-notebook, CUDA

RELEVANT COURSES

Computer Vision	Machine Learning	Stochastic Systems	Robot Intelligence and Planning
Linear Systems	Nonlinear Systems	Optimal Control	Interactive Robot Learning
Advanced Programming Techniques (CUDA, OpenMP, OpenGL, Sockets)			Mobile Manipulation

RESEARCH PROJECTS

Cooperative Mobile Manipulation *August 2019 - Present*
Working both in simulation and on hardware

- Developing deep reinforcement learning schemes for multi-robot systems to cooperatively transport objects.
- Implementing operational space control on KUKA IIWA7 arms that are mounted on mobile bases.
- Implementing a vehicle-arm coordination scheme to enable the mobile base move in proper symphony with the arm.
- Working with Rigidbody Dynamics Library (RBDL) and DRAKE in C++, version control (Git), Python and ROS.
- Working with the following simulators: Gazebo, Drake and Pybullet (interfaced with OpenAI gym).

CLASS PROJECTS

Robot Intelligence and Planning *Fall 2020*

- Implemented a version of DeepMind's AlphaZero chess AI. Used Deep Reinforcement Learning in conjunction with Monte-Carlo Tree Search to train a deep neural network to play the game of chess. Tools used include: Python, Pytorch, cuda.
- Implemented deep reinforcement learning algorithms like: DQN, REINFORCE and A2C.
- Implemented Rapidly-exploring Random Trees (RRT) to find a path between start and goal point on a 2D map. Algorithm implementation included steering dynamics with nonlinear optimization and obstacle detection. Code was written in Python.

Computer Vision *Fall 2020*

- Image classification using deep learning frameworks such as: CNNs, transfer learning with Alexnet and pytorch.
- Feature Matching, using feature detectors (Harris detector) and feature descriptors (SIFT) in pytorch.

Advanced Programming Techniques *Fall 2019*

- Used OpenGL to design a bitmapped football field with multiple drones controlled by different MPI processes. The goal was to create a simulation of multiple drones display over a football field.
- Developed a distributed MPI program to guide simulated spaceships safely back to dock with the mothership (also simulated). Each spaceship was controlled by a different process, while the mothership was controlled by the master process.
- Designed a UDP server-client program.
- Optimized code for solving 'Largest Product in a Grid' by creating an OpenMP multithreaded program.

TEACHING POSITIONS

Graduate Teaching Assistant *August 2016 - May 2018*
Georgia Tech *Atlanta GA*

- Signals and Systems, Junior year course (3 semesters)
- Senior Design Project, Senior year course (2 semesters)

HONORS, AWARDS AND SOCIETIES

- Tau Beta Pi Honors Society, Member *Aug 2014 - Present*
- Institute of Electrical and Electronic Engineering, Member *Aug 2013 - Present*

EXTRACURRICULAR ACTIVITIES

Volunteer High-school Curriculum Contributor *March 2021*

- Worked with Atlanta Public School teachers to develop a project-based learning (PBL) component of the Algebra II curriculum.

Volunteer Application reviewer *2018 - present*

- Annually review applications for the undergraduate summer research program at MIT.