

2020 Chapter Report:

OR IEEE RAS

Robotics and Automation
Society

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Oregon IEEE RAS Chair

IEEE RAS Mission Statement

Our Mission is to foster the development and facilitate the exchange of scientific and technical knowledge in Robotics and Automation that benefits members, the profession and humanity.

<http://www.ieee-ras.org/about-ras>

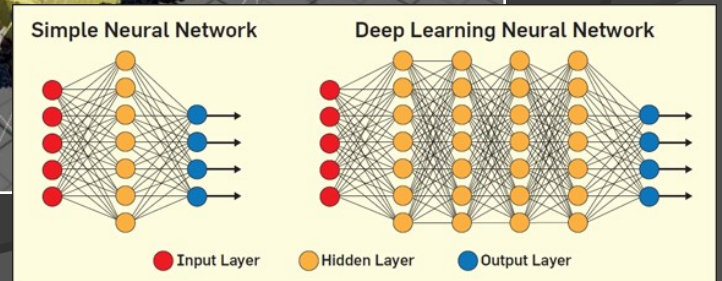
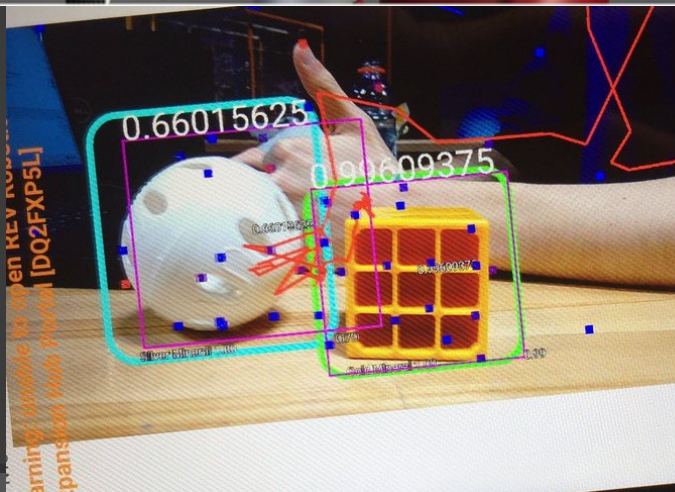
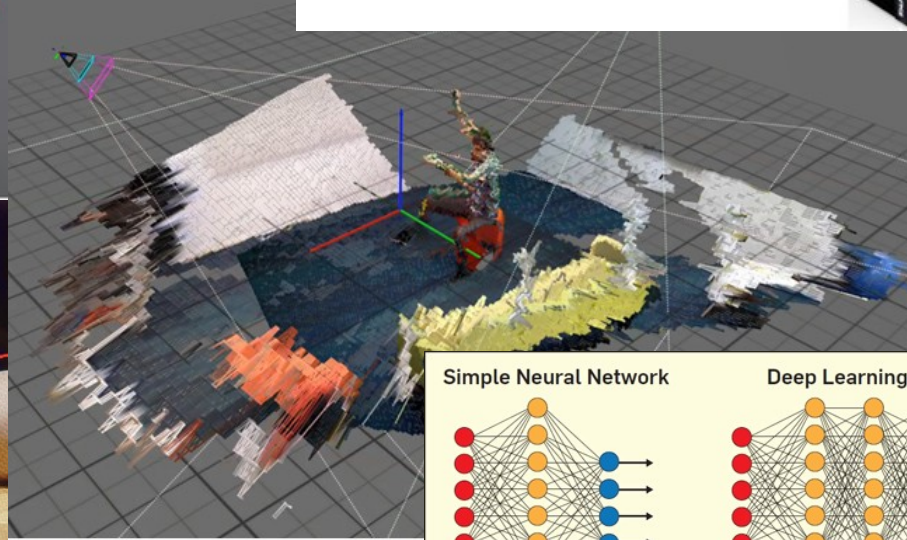
Highlights

Virtualization FUSA Security Artificial Intelligence Machine Real Time Vision

Intel KEON Intel CORE Intel ATOM Movidius ARRIA STRATIX CYCLONE

Enabled by ROS2

This diagram illustrates the Intel Movidius AI ecosystem. At the top, six circular icons represent key capabilities: Virtualization, FUSA, Security, Artificial Intelligence, Machine Vision, and Real Time. Below these, the Intel processor families (KEON, CORE, ATOM, ARRIA, STRATIX, CYCLONE) and the Movidius AI accelerator are shown. A central banner states 'Enabled by ROS2'. The bottom section features images of a mobile robot, two robotic arms, and a server rack, indicating the system's application in various industrial and service environments.



2019 Seminars and Workshops

Title of ROS and Axiom Sponsored	Speaker	Attendance
Fiber Reinforced Polymer Construction Seminar	Ivar Thorson	15
The Sawyer Collaborative Robot	Brendan Ball of Cobot Team LLC	20
ROS Lab: Open Manipulator Build	Hosted by Axiom Electronics	7
Demystifying Deep Learning	Manuel Muro: Oregon hardware deep learning engineer	28
Focusing on Visual Perception for Robotics and Domotics Using RGBD Cameras	David Gonzalez-Aguirre of Intel Research	24
Intel Open Source Robot Development Kit Using ROS 2	Mat Hansen: Intel ROS Navigation project head	32

2020 Seminars and Workshops

Title of ROS and Axiom Sponsored	Speaker	Attendance
Teaching FTC High School Students Tensorflow Lite and Model Training Strategies	Edward C. Epp: Oregon IEEE RAS Chair	10
Upcoming focuses on Tensorflow integrated with ROS		-

Leveraging Tensorflow for Locating FTC Game Pieces

LinkedIn identified the Machine Learning Engineer as one of the five top emerging jobs in 2018. The top skills include

- Deep Learning,
- Machine Learning, and
- TensorFlow.

Android TensorFlow: implementing machine learning models on mobile devices

QualComm integrated Tensorflow lite into the FIRST Tech Challenge (FTC) SDK

Workshop outline for 3 hour version

- Demo: Robot leverages TensorFlow to identify and target game pieces
- Code walkthrough: Java TensorFlow Lite demo program explained
- Hands-on: Enhance the demo robot's capabilities
- Limitations: Identifying shortcomings on their impacts of trained models
- Convolutional Neural Network: How things work underneath.

Example workshop: <https://meetings.vtools.ieee.org/m/207937>

2019 FTC Tesnsorflow Workshops

1 hour FIRST Fair Seminars at Gladstone High School

Time slot	Oct 19 Attendees
9:30 am	20
10: 30 am	35
11:30 am	10

3 hour ORTOP hands-on workshops

Time slot	Oct 5 Attendees
morning	20
afternoon	35

1.5 hour Benson workshop trial-run

Time slot	Sept 25 Attendees
3:30 pm	10

95 Total
Attended

FTC workshop proposal

- Refine Tensorflow workshops
 - Provide additional exercises that expose underlying concepts
- Early and mid fall provide opportunities for hands on workshop
- Late fall provide a couple of Q&A drop in centers to help teams overcome hurdles

Reported Intel Matching Volunteer Hours

Activity	Hours
ROS and other robotics talks and seminars	138.5
Tensorflow workshops for high school students	216.0
ExCom meetings, activities and reports	58.5
Total hours	413.0