ATHARV SONWANE

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ABOUT ME

I am interested in machine learning, specifically in ways of creating models capable of human like generalization and reasoning. I am also interested in deep reinforcement learning and training systems that can meaningfully interact with their environment.

EDUCATION

Birla Institute of Technology and Science Pilani, Goa, India *Aug 2018 - Present*
Bachelor in Engineering (Hons.), Computer Science
CGPA = 8.7 / 10

PROJECTS

Trotbot: Autonomous delivery robot *Sep 2018 - Present*

- Built obstacle detection and path planning stack using Robot Operating System (ROS) in Python
- Implemented Rapidly Exploring Random Trees (RRT) for path planning in complex indoor environments

Onseshot Classification using Transfer Learning *Aug 2019*

- Used transfer learning techniques to improve performance of a Siamese network for one shot learning on the Omniglot dataset

Q – Learning for some Atari Environments *Aug 2019*

- Experimented with using Double DQN algorithm to play Pong and Pacman gym environments.

Spoken Digit Classification *Dec 2019*

- Trained a CNN to classify audio clips of spoken digits encoded with a Short Time Fourier transform.

Robotic Sketcher *Jan 2020*

- Created an automated sketching machine to produce visually appealing sketches from images.

EXPERIENCE

Prediction of Ionospheric Scintillation *Jan 2020 – Present*
Digital Communications Lab, BITS Pilani, Goa

- Analysis of GNSS (Global Navigation Satellite System) signals to learn more about disturbances due to ionospheric activity
- Using encodings such as Gramian Angular Fields with a combination of ConvLSTM and UNet architecture to predict future scintillation in the ionosphere.
- Using XGBoost for classification of multipath data.

Software for Robotics, Reading Course *Aug 2019 – Dec 2019*
Advisor – Prof. Neena Goveas, Dept. CS and IS, BITS Pilani, Goa

- Prepared lectures and lab exercise for an introductory robotics course.
- Designed final project around the various aspects that make up an embedded system.

RELEVANT COURSEWORK

Online Machine Learning (Stanford), Convolutional Neural Networks for Visual Recognition (Stanford CS231n), Deep Reinforcement Learning (UC Berkley CS285)

Offline Graphs and Networks, Quantum Informatics and Computing, Linear Algebra, Data Structures and Algorithms, Object Oriented Programming, Probability and Statistics, Digital Design, Calculus

SKILLS

Programming: Python, C, Java, C++, Bash, Assembly*, MATLAB*, Rust*

Frameworks and Tools: Pytorch, Keras, NumPy, Pandas, Qiskit, Git

Robotics and Embedded Systems: Robotics Operating System (ROS), rViz, Gazebo, Raspberry Pi, Arduino.

(* = familiar)

RESEARCH INTERESTS

Deep learning, Reinforcement Learning, Machine Perception and Robotics, Cognitive Neuroscience, Meta Learning.

EXTRA-CIRCULAR ACTIVITIES

Core Member
Electronics and Robotics Club

Core Member
IEEE Student Chapter