NISHANT JOSHI

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EDUCATION

KTH Royal institute of Technology ***August 2019 - Present***
Dept. of Electrical Engineering and Computer Science
Master of Science(EIT Digital Exit Year)
Computer Science and Engineering spcl. ICT Innovation (Autonomous Systems)

Technische Universität Berlin ***October 2018 - July 2019***
Dept. of Electrical Engineering and Computer Science
Master of Science(EIT Digital Entry Year)
ICT Innovation (Autonomous Systems)

RV College of Engineering, Bangalore ***August 2013 - May 2017***
Bachelor of Engineering ***First class with distinction***
Department of Mechanical and Industrial Engineering

EXPERIENCE

Forscungzentrum Jülich (INM6/IAS6 Neural Circuits Group) Feb 2020-Oct 2020
Research Intern(Master thesis)

· Worked in collaboration with Institute of Neuroscience and Medicine (INM6) and Institute of Advanced Simulation (IAS) under the guidance of Prof. Dr. Abigail Morrison.

· The aim of this project is to study the Universality and Individuality in the dynamics of RNNs and extend it to biologically motivated networks, inspired by Maheswarnathan et. al. This involves training and ensemble of recurrent networks using Jülich supercomputing cluster to see if the representational geometry and dynamics vary between different types of networks for the same task. This helps in a better understanding of the similarity between RNNs and biological networks.

Qure.ai, Mumbai Jun-Sep 2017
Project Intern

· Key learning involved the annotation and pre-processing of medical data and training of the convolutional neural net model for finding possible ailments. Also, worked on the implementation of various machine learning algorithms such as Decision Tree and Random Forest to automate the medical report generating system.

PROJECTS

Autonomous Warehousing Project: In a group of of six student, we designed a completely autonomous warehousing system using MORSE and ROS. Our system consists of 8 agents who can recognize when a new packet enters the warehouse and can smartly assign the closest robot to fetch it and take it to its storage location. I designed the path planner for the system. I implemented two algorithms for this purpose, a simple A* and Conflict Based search for resolving path conflcts between agents. **Language**: C++, **Packages**: ROS, Boost, MORSE

Controllability Of Brain Networks Using Targeted Stimulation: In this project we analyze the controllability of different sections of the brain by selectively stimulating it and understanding the

effect on the entire brain using AAL Parcellation dataset. The dynamics of the node is modelled using non-linear control and the behaviour is compared with a linear model. It was seen that linear model can successfully predict the behaviour. **Language:** Python, **Packages:** Numba, Numpy, Matplotlib, Pandas, SKlearn

Design and Analysis of an AUV: A completely new hull design and control system was created using CAED tools and Simulink which was then taken up for rigorous tesing such as CFD analysis using various software tools such FlowExpress and OpenProp. Results were published in ICCE Asia-2017. **Packages:** FlowExpress, SolidWorks, OpenProp, Simulink

Design of Robotic Swarm for AGVs: Worked on designing a swarm robotic coordination system which uses various swarm algorithms to make a decentralised AGV system. Demonstrated the swarm behaviour using various simulation platforms such as Net-Logo, ARGoS and built a simple prototype for the same. **Language:** C++, **Packages:** NetLogo, ARGoS

Sentiment Analysis using NLTK and TensorFlow:
I created a neural network to predict the sentiment of the text using TensorFlow and NLTK. Achieved 60 % accuracy on Stanford dataset for NLP. **Language:** Python, **Packages:** NLTK, Tensorflow

TECHNICAL SKILLS

Modeling and Analysis	SolidWorks, MATLAB, NetLogo, FlowExpress, ANSYS, OpenModellica
Software & Tools	MS Office, LaTeX, Excel, Stata
Languages and Packages	C++, Python(Sklearn, Numba, Numpy, Pandas, Keras, Tensorflow, Pytorch), Scala, ROS, Java(elementary), ARGos
Relevant Courses	Robotics(RBO), Machine Intelligence I, Descrete Event Systems, Hybrid Systems, Scalable Machine Learning, Reinforcement Learning, Applied Statistics, Artificial Neural Networks Statistics for Decision Making, Linear Algebra

ACADEMIC ACHIEVEMENTS

Won the Best Department Project award and nominated for most innovative project award in the college.

Educator and Facilitator for RIO +22 power India program by the UN.

Recipient of EIT Digital Scholarship in the form of tuition waiver and a monthly allowance.