

SOMNATH SENDHIL KUMAR

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EXPERIENCE

IoT, Web, App Developer

KyuKey inc

📅 March 2020 – Oct 2020 📍 Bangalore, India

- My role in this startup was to develop an IoT based solution for the traditional inconvenient locking systems. This entailed developing the Web Backend, a mobile application frontend, and the smart lock's firmware.

IoT developer

Heal

📅 March 2020 - June 2020 📍 Bangalore, India

- It was apprenticeship-cum-internship under professor Dr. Arbindo Gupta, I developed an IoT solution for telemedicine platforms to monitor the physical condition. I had developed a clustering algorithm to assign master and slaves in the group of devices to reduce the system's power consumption.

ACHIEVEMENTS

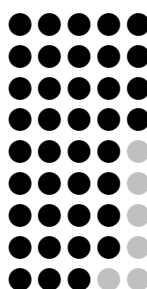
🏆 1st prize among freshmen in "**MLWare 2020**", this is the machine learning hackathon in "**Technex 20**", The annual techno-management fest of IIT (BHU), Varanasi.

🏆 Secured a rank of 361 and Qualified into Level two of **Flipkart Grid Robotics challenge** under Autonomous Indoor Drone Theme.

📖 Secured an All India Rank of 3421 in **JEE Advanced** Examination, This is top 0.3 % of people that appeared for the national level exam.

SKILLS & INTERESTS

Reinforcement Learning
Deep Learning, machine learning
Python, C++, Java, Kotlin
Tensorflow, OpenAi Gym, Pybullet
Robotic Operating System (ROS)
Robot Control and Mechanics
Computer Vision
Linux
Embedded Systems



EDUCATION / COURSES

Bachelor of Electrical Engineering
Indian Institute of Technology (BHU), Varanasi

📅 Jun 2019 – Under Progress 📍 Varanasi, India

HONORS & AWARDS



Member of Association of Computational Linguistics (ACL), Pennsylvania, United States

PROJECTS

Light Gun / Computer Vision [\[link\]](#)

- A simple input device named light gun which mimics a mouse pointer by estimating the orientation of a pointer camera on a toy gun. This estimation is done using the 3D reconstruction of the scene and using the 3D geometrical constrain of the object. The link contains detailed information about the same.

Hand-Imitation / Reinforcement Learning

[\[link\]](#)

- Learning a policy for a robotic arm to imitate a human arm given in a picture. We took a naive approach of using the reconstruction loss of the masked images of the robotic and the human arms. Which is very intuitional i.e., the absolute difference of the shadows of the two arms (robotic and the one to be imitated). As a current progress we are trying to inculcate Imitation learning for the same.

iOTA Modular Bot / Swarm and Robotics [\[link\]](#)

- This is a modular bot platform that was intended to help us learn control, planning, and perception algorithms for such multi-agent cooperative system. The main objective of this was to serve as a test-ground for experimentation with Hierarchical and Multi-Agent Reinforcement Learning. This is my current Research-Oriented project that I am doing under the Robotics Club, IIT BHU, Varanasi.

Pauci-Bot / Robotics Operating System and Computer-Vision

- This was a more theoretical approach on modelling and controlling a two wheeled robot with rotary encoders. The main objective was to serve as a platform to experiment like the turtlebot. This robot can localize itself using the on board odometry and encoder readings. I am currently trying to utilize computer vision algorithms like Optical Flow to make the estimation much accurate. The code base of the robot is in ROS hence making a seamless deployment.

KiloBot-MultiAgent / Multi-Agent Reinforcement Learning [\[link\]](#)

- This is a simple implementation of the [\[paper\]](#) and based on the Swarm robot Platform "Kilo-Bot" by Harvard University.