

CONTACT

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LinkedIn

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SUMMARY

Having no family background of engineering and technology, I am a self-motivated and persistent young professional with strong critical and analytical thinking skills, and very high attention to detail. I am always open and ready to stretch my limits by acquiring novel knowledge/skills and applying them to solve problems at hand. I have a burning desire to pursue theoretical, developmental and experimental research work at the intersection of traditional and learning based approaches to develop socially aware and reliable autonomous systems.

WORK SAMPLES

YouTube

youtube.com/TinkerTwins

GitHub

github.com/Tinker-Twins

Google Play

play.google.com/store/apps/dev?id=8006260557439159252

Google Scholar

scholar.google.com/citations?user=Y0iPBAAoAAAAJ

SKILLS

Robotics and Autonomous Systems

Autonomous Vehicles, Mobile Robots, Manipulators

Artificial Intelligence

Algorithms for Intelligent Systems, Machine Learning, Deep Imitation and Reinforcement Learning

Programming

Python, C, C++, Embedded C, C#, MATLAB, Simulink, LabVIEW

Robot Operating System (ROS)

Embedded Platforms

AVR & ARM Microcontrollers, Arduino, Raspberry Pi, Odroid, Jetson Nano, NI cRIO, NI myRIO

Internet of Things (IoT)

NodeMCU (ESP8266)

Circuit Designing and EDA

NI Circuit Design Suite, Proteus, EAGLE, Fritzing

CAD and 3D Modelling

AutoCAD, SOLIDWORKS, 3DS Max, SketchUp

Multiphysics Simulation

ANSYS, COMSOL

Manufacturing Technology

3D Printing, CNC Machining, Laser Cutting

Automation

Hydraulics, Pneumatics, PLC

Application Development

Unity, MIT App Inventor

Web Development & DBMS

HTML, CSS, JS, SQL

Documentation

Microsoft Office, LaTeX

Graphic Design and Video Editing

CorelDraw, Photoshop, After Effects, Filmora

TANMAY VILAS SAMAK

EXPERIENCE

Jul 2020 - Present



Undergraduate Research Intern

Nanyang Technological University, Singapore

I was selected as an India Connect @ NTU 2020 research intern, wherein my team and I developed a simulation system for scaled autonomous vehicles – AutoDRIVE Simulator. Later, I mentored the next batch of IC@NTU students and am currently heading team SINGABOAT-VRX for the Virtual RobotX Competition 2022.

Jan 2019 - Present



Autonomous Systems Researcher

Autonomous Systems Lab, SRMIST

I have worked on several projects in the field of autonomous systems including robot locomotion, kinematics and dynamics, perception, sensor fusion, mapping, probabilistic localization, SLAM, motion planning and control. I am currently working on traditional as well as learning-based strategies for autonomous systems. My research particularly targets autonomous vehicles and mobile robots including single and multi-agent paradigms.

Aug 2018 - Dec 2018



Mobile Robotics Researcher

NextTech Lab, SRMIST

I carried out research in the field of mobile robotics that was particularly focused on developing control strategies for a single robot as well as coordinated multi-robot swarms. My work mostly involved simulating control algorithms for mobile robots in MATLAB, but I also developed a small differential-drive mobile robot to validate the control strategies in real-world.

Jul 2018 - Aug 2018



Product Development Engineer

All India Council for Robotics and Automation (AICRA)

I was assigned a project to develop a product-level design of a mobile robot from ground-up. I was trained and mentored to meticulously design components and assemblies for various subsystems of the robot and validating the designs by carrying out finite element analysis and motion analysis of all the components and sub-assemblies. I was also exposed to developing photorealistic renderings, animations and crisp documentation for marketing purpose. This not only improved my proficiency in using SOLIDWORKS, but I also gained a robust understanding of product development process as a whole.

EDUCATION

Jul 2017 - May 2021



SRM Institute of Science and Technology

B.Tech. Mechatronics Engineering | Silver Medallist | CGPA: 9.63 | Score: 94.71%

[[Degree Certificate](#)] [[Rank Certificate](#)] [[Transcript](#)] [[FYP Viva Voce](#)]

PUBLICATIONS

Journal Articles

Samak T.V., Samak C.V., Kandhasamy S., "Robust Behavioral Cloning for Autonomous Vehicles using End-to-End Imitation Learning," SAE IJCAV, 2021; 4(3): 1-17. DOI: 10.4271/12-04-03-0023. [[Preprint](#)] [[Video](#)] [[Code](#)]

Samak C.V., Samak T.V., "Novel Accelerated Protocol for Faster Sensor Data Fetch in High Speed Robots," IJET, 2020; 12(3): 456-462. DOI: 10.21817/ijet/2020/v12i3/201203021. [[Paper](#)]

Samak C.V., Samak T.V., "Design of a Low-Cost PC-Based Digital Storage Oscilloscope using Virtual Instrumentation," IJECIERD, 2020; 10(1): 9-18. DOI: 10.24247/ijecierdjun2020. [[Paper](#)]

Samak C.V., Samak T.V., "Design of a Two-Wheel Self-Balancing Robot with the Implementation of a Novel State Feedback for PID Controller using On-Board State Estimation Algorithm," IJRRD, 2018; 8(2): 1-10. DOI: 10.24247/ijrrddec20181. [[Paper](#)] [[Video](#)] [[Code](#)]

Samak C.V., Samak T.V., "Novel Design of a Magnetically Switchable MOSFET using Magnetoresistive Elements," TELKOMNIKA, 2018; 16(5): 2233-2238. DOI: 10.12928/telkomnika.v16i5.9539. [[Paper](#)]

Book Chapters

Samak C.V., Samak T.V., Kandhasamy S., "Control Strategies for Autonomous Vehicles," Chapter 02, Autonomous Driving and Driver Assistance Systems, Taylor & Francis, 2021. [[Preprint](#)] [[Video](#)]

Conferences

Samak T.V., Samak C.V., Xie M., "AutoDRIVE Simulator: A Simulator for Scaled Autonomous Vehicle Research and Education," CCRIS, 2021. [[Preprint](#)] [[Presentation](#)] [[Video](#)] [[Code](#)]

Samak C.V., Samak T.V., Kandhasamy S., "Proximally Optimal Predictive Control Algorithm for Path Tracking of Self-Driving Cars," RSI AIR, 2021. [[Preprint](#)] [[Presentation](#)] [[Video](#)] [[Code](#)]

Kandhasamy S., Kuppusamy V.B., Samak T.V., Samak C.V., "Decentralized Motion Planning for Multi-Robot Navigation using Deep Reinforcement Learning," IEEE ICISS, 2020; 709-716, DOI: 10.1109/ICISS49785.2020.9316033. [[Preprint](#)] [[Presentation](#)] [[Video](#)] [[Code](#)]

Samak T.V., Samak C.V., "AutoDRIVE Simulator," ROS World, 2020. [[Video](#)] [[Code](#)]

Samak T.V., Samak C.V., "Project Antralsrushti," NSS ISDC, 2017. [[Report](#)] [[Presentation](#)] [[Slides](#)] [[Poster](#)]

Samak T.V., Samak C.V., "Project SPECTRA," NSS ISDC, 2016. [[Report](#)] [[Presentation](#)] [[Slides](#)] [[Poster](#)]

Preprints

Samak C.V., Samak T.V., Kandhasamy S., "Autonomous Racing using a Hybrid Imitation-Reinforcement Learning Architecture," arXiv, 2021. [[Preprint](#)] [[Video](#)] [[Code](#)]

PRESS COVERAGE

Jul 15, 2017

The Times of India [\[Article\]](#)

Jun 10, 2017

Dainik Saamana [\[Article\]](#)

May 14, 2017

Maharashtra Times [\[Article\]](#)

Jul 17, 2016

Maharashtra Times [\[Article\]](#)

Jan 30, 2016

Maharashtra Times [\[Article\]](#)

TV Interview

IBN Lokmat [\[Video\]](#)

ORGANIZATIONS

- Association for Computing Machinery
- Society of Automotive Engineers
- The Robotics Society
- Google Developer Community
- Lema Community

REFERENCES

Dr. Xie Ming

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Nanyang Technological University, Singapore

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Professor and Head

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Mr. K. Sivanathan

Assistant Professor (Sr.G.)

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SRM Institute of Science and Technology, India

Phone: +91 9840123959

Email: sivanatk@srmist.edu.in

LANGUAGES

Marathi

First Native

Hindi

Second Native

English

Professional Proficiency

Japanese

Limited Proficiency

Sanskrit

Elementary Proficiency

INTERESTS

- Tinkering & Making
- Teaching & Education
- Camping & Trekking
- Cycling & Swimming
- Driving & Road Trips

PATENTS

[in 202041046707] An On-Board Hardware Addressing System for a Modular Reconfigurable Robot and a Method Thereof

[in 202041027290] A Mechanism for Varying Moment of Inertia of a Rotating Structure

[in 202041001687] An Apparatus for Inspecting Profile of a Gear

HONOURS & AWARDS

- University Silver Medal in B.Tech. Mechatronics Engineering cohort of 2017-21 at SRMIST
- Best Paper Award for paper "AutoDRIVE Simulator: A Simulator for Scaled Autonomous Vehicle Research and Education" at CCRIS 2021
- Best Project Award for "AutoDRIVE – An Integrated Platform for Autonomous Driving Research and Education" at National Level IEEE Project Competition 2021
- Gold Medal for research paper entitled "Autonomous Racing using a Hybrid Imitation-Reinforcement Learning Architecture" at SRM Research Day 2021
- Academic Excellence Scholarship at SRMIST for Academic Year 2020-21
- Academic Excellence Scholarship at SRMIST for Academic Year 2019-20
- NTU-India Connect Research Fellowship
- Gold Medal for research paper entitled "Deep Learning Based Behavioural Cloning for Motion Control of Autonomous Vehicles" at SRM Research Day 2020
- Best "Do Engineering Award using LabVIEW" Project Award for "iWheel" at SRISHTI 2020 – 7th National Level Technical Project Exhibition and Competition
- Runners Up for "BlockBOTS" at Make-A-Thon 4.0 (2020)
- Academic Excellence Scholarship at SRMIST for Academic Year 2018-19
- Silver Medal for research paper entitled "Novel Design of a Magnetically Switchable MOSFET using Magnetoresistive Elements" at SRM Research Day 2018
- First Prize for "Project Antralsrushi" at NASA International Space Settlement Design Contest 2017
- First Prize for "Project SPECTRA" at NASA International Space Settlement Design Contest 2016
- First Prize & Innovation Award for "Wireless Aqua-Cleaner Robot" at IIT TechFest 2015

For an exhaustive list of honours and awards, kindly take a look at my [LinkedIn profile](#)

RECENT PROJECTS

Jul 2020 – Present

[AutoDRIVE](#) | An Integrated Platform for Autonomous Driving Research and Education

Apr 2021 – May 2021

[Smart City Management](#) | Autonomous Traffic Control using IoT and V2I Communication

Mar 2021 – Apr 2021

[Intersection Management](#) | Multi-Agent Intersection Traversal using Deep Reinforcement Learning

Feb 2021 – Mar 2021

[Behavioural Cloning](#) | End-to-End Learning for Autonomous Driving with Sim2Real Transfer

Jan 2021 – Feb 2021

[Autonomous Parking](#) | Autonomous Parking using Probabilistic Robotics Approach

Aug 2020 – Dec 2020

[AutoRACE](#) | Autonomous Racing using a Hybrid Imitation-Reinforcement Learning Architecture

Sep 2020 – Dec 2020

[MARL](#) | Multi-Agent Reinforcement Learning for Decentralized Motion Planning and Control

Jan 2020 – May 2020

[RoboCUBES](#) | An Intelligent, Modular and Reconfigurable Robotics Platform

For an exhaustive list of projects, kindly take a look at my [LinkedIn profile](#)

RELEVANT CERTIFICATIONS

Jul 2020

[Self-Driving Car Engineer Nanodegree](#) | Udacity

Apr 2020

[Certified SOLIDWORKS Associate \(CSWA\)](#) | Dassault Systèmes

Apr 2020

[Deep Learning Specialization](#) | DeepLearning.AI (Coursera)

Dec 2019

[Self-Driving Cars Specialization](#) | University of Toronto (Coursera)

Dec 2019

[Autonomous Mobile Robots](#) | ETH Zürich (edX)

Feb 2019 - Apr 2019

[PLC Basics, Programming & Interface to Pneumatic Drives](#) | Bosch Rexroth

Sep 2018 - Nov 2018

[Basic, Electro & Advanced Pneumatics](#) | Bosch Rexroth

Jul 2018 - Sep 2018

[Basic, Electro & Proportional Hydraulics](#) | Bosch Rexroth

Oct 2018

[Control of Mobile Robots](#) | Georgia Institute of Technology (Coursera)

For an exhaustive list of certifications, kindly take a look at my [LinkedIn profile](#)