



Nilay SHETH
Embedded | Control Systems

nilay994.github.io
[@ nilay_994@hotmail.com](mailto:nilay_994@hotmail.com)
[linkedin.com/in/legorative](https://www.linkedin.com/in/legorative)

[Delft, Netherlands](#)
[Embedded systems at fuel cell tech](#)
[+31 616 948 132](#)

PROFESSIONAL EXPERIENCE

zepp solutions

Feb2021-current

EMBEDDED SYSTEMS ENGINEER | CONTROL AND SOFTWARE TEAM

- > Firmware for the Engine Control Units (ECU) of zepp solutions, a hydrogen fuel-cell company.
- > Filtering sensor data, implementing Kalman observers, controlling various automotive valves and pumps.
- > Detection of various failure modes, facilitating a dashboard visualizing key-metrics of the system.

MISRA C CAN J1939 IEC61508 ISO 26262 unit & HiL tests CI builds Infineon AURIX grafana

MAVLab Delft

AlphaPilot

Lockheed Martin

Jan2019-Jan2021

CONTROL AND EMBEDDED TEAM, AEROSPACE FACULTY, TU DELFT

- > Finished as world champions at AIRR amongst 432 research teams, with a prize of \$1M [\(highlights\)](#).
- > AlphaPilot [AI Robotic Racing \(AIRR\)](#) is about autonomous racing against human pilots and was mentored by experts from Lockheed Martin, Drone Racing League and MIT's Aerospace lab.
- > Designed the race drone's state estimation, control and trajectory planning pipeline.
- > Firmware for [PercEvite](#), Sense-and-Avoid air traffic control (European Single-Skies initiative).

Matlab/Python C/C++ ESP32 UAV HiL ROS threading computer-vision linux-preemptive RT

Espressif

Systems,
Shanghai

Jul2016-Aug2017

FIRMWARE DEVELOPER | APPLICATIONS ENGINEERING

- > Added Linear Algebra (LAPACK) and FFT support, MIPS and FLOPS profiling for matrix inversion.
- > Developed parts of the famous [esp-idf](#) alongwith Amazon Web Services for embedded platforms.
- > Audio Processing for Speech Analysis using Fixed point arithmetic on ESP-32's Tensilica Processor.
- > Motor control drivers: BLDC/brushed/servo and I2C/SPI/UART drivers for LCDs for HMI applications.

Embedded C FreeRTOS ESP32 ESP8266 esp-idf Matlab git

FIRST

Robotics, Sydney

Jan2015-Mar2016

TEAM MENTOR FRC-6024 | CONTROL SYSTEMS

- > Layed out the control system and drive-train over the CAN bus of NI-Rio (credits to WPI-lib).
- > Mentored India's debut FRC team to finish in the top 10 of Australian regionals.

NI-RoboRio labview C++/java

ABU Robocon,
Asia Pacific
region

Nov2013-Mar2016

TEAM CAPTAIN ABU-ROBOCON | SECRETARY, ROBOTICS AND AUTOMATION CHAPTER VJTI

- > Competition for prototyping mechatronic systems addressing novel problem statements in robotics.
- > Quarter-Finalist at Robocon 2016, Semi-Finalist at Robocon 2014: promoting VJTI to internationals.
- > Represented India at the International ABU-RoboCon, winning the Panasonic Award for Innovation.

Embedded C AtMega1280 motor driver designs harness management motor control

ACADEMICS AND CO-CURRICULARS

TU Delft,
Netherlands

Aug 2017-Sep2019

MASTERS IN CONTROL AND EMBEDDED SYSTEMS

- > Satellite Orbit Determination: GPS, non linear least squares, orbit dynamics, tracking and prediction.
- > Implemented detumbling on the [Attitude Control subsystem](#) of Delft's PocketCube satellite.
- > Networked & Distributed Control: convex optimization, sampling + synchronization algorithms.
- > Vehicle Dynamics: ABS, path planning algorithms, localization with Particle Filters.

Veermata Jijabai
Technological
Institute (VJTI)

Aug2012-May2016

BACHELOR OF TECHNOLOGY IN ELECTRONICS ENGINEERING

- > Graded 'A+' on Bachelor thesis on [Swarm Robots](#) in Closed Loop Visual Odometry system, using Li-Fi.
- > Product ideas: [Hybrid HID](#) ARM Cortex and wrist-watch multimeter at Texas Instruments Challenge.
- > Designed a winning grid solving robot at TechFest 2014, IIT-Bombay.
- > Undertook workshops on embedded robotics for 300+ students around Mumbai (ARM, AVR, ESP32).
- > MIT Media Labs DI: Open Sourced and prototyped a [wrist band](#) for taking 360° panoramas.
- > numerical techniques, applied math, digital signal processing, op-amps and filters, VLSI design.

PUBLICATIONS

Dec 2019

[Research](#) in drone racing was featured at [Business Insider](#) [Nature](#) [Wired](#) [Bloomberg](#) [BBC](#).

Sept 2019

Study during M.Sc., [Thesis on state estimation and optimal control for racing drones](#).

Sept 2017

Published in Advances in Intelligent Systems and Computing (Springer, Germany) on [LiFi Swarm Robots](#).

Dec 2015

Published [MOSFET based motor drivers](#) with closed loop control at the 12th International IEEE Conference, Indicon.

Jun 2015

Hindustan Times, India: Tech students engineer fixes for health-care issues: reference: SRA, VJTI.

Aug 2014

NHK Japan, Hindustan Times, Times of India: City College VJTI representing India internationally, ref-RoboCon 2014.

SKILLS

Programming
 Controls
 Embedded
 Softwares
 Languages

Embedded C, C++, FreeRTOS, Keil, MATLAB, Python, Labview, OpenCV, ROS, multi-threading.
 LAPACK for uCs, HiL tests, Adaptive control laws, Kalman and RANSAC filtering, system identification.
 STM32, MSP432, ESP32, closed loop motor-control, NI-Rio, Multisim, KiCad, oscilloscope, soldering.
 Git-scm, Eclipse, Photoshop, CorelDraw, Latex.
 English (fluent), Hindi (fluent), Mandarin (limited proficiency).