

https://nilay994.github.io @ nilay_994@hotmail.com in linkedin.com/in/legorative

• Delft, Netherlands Embedded & Control at fuel cell tech **1** +31 616 948 132



Professional Experience

Z zepp solutions Feb2021-current

EMBEDDED SOFTWARE ENGINEER | CONTROL AND SOFTWARE TEAM

- > Embedded software for Engine Control Units (ECU) of zepp solutions, a hydrogen fuel-cell company.
 - Architecture for safety critical ISO26262 compliant software, adding the J1939 communication stack.
 - > Filtering/fusing 30 onboard sensors, adding Kalman observers, control for 15 pumps/motors/valves.
 - > Pipeline for unit tests (pytest), static (MISRA), docs checks (doxygen) over our local CI/CD (jenkins).
 - > 4G telemetry pipeline for on field vehicles, data analysis tools, build tools for embedded firmware.
 - > Expanding zepp's fuel cell test bench system, system integration testing, factory acceptance testing.
 - > Onboarding zepp's firmware team to the V-model, build processes and software architectures. C python | [inting | 4G telemetry | Jenkins | J1939/CAN | Infineon Aurix | V-model | automotive grade C

☑ MAVLab Delft ✓ AlphaPilot Lockheed Martin Jan2019-Jan2021

CONTROL AND EMBEDDED ENGINEER | DRONE LAB, TU DELFT AEROSPACE

- > Finished as world champions at AIRR amongst 432 research teams, with a prize of \$1M 🗹 (highlights).
- > AlphaPilot 🗗 Al 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 | Object oriented C++ | ESP32 | UAV | HiL | ROS | threading | computer-vision | linux-preemptive RT |

Espressif

Systems, Shanghai

Jul2016-Aug2017

FIRMWARE DEVELOPER | APPLICATIONS ENGINEERING

- > Developed parts of the 🗹 esp-idf alongwith Amazon Web Services for embedded platforms.
- > Speech analysis using FFT and LAPACK in C on ESP32'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 AWS

SRA, VJTI Society of Robotics and Automation. Mumbai

CONTROL AND EMBEDDED LEAD | SECRETARY | ROBOTICS CHAPTER, VJTI

- > Finalist at Robocon 2014 & 2016: taking our local chapter international and winning the Panasonic Award for Innovation. Robocon proposes novel semi-autonomous challenges for robotics in Asia.
- Mentored India's debut FIRST Robotics FRC6026 to finish in the top 10 of Australian regionals.
- > Undertook workshops on embedded robotics for 300+ students around Mumbai (ARM, AVR, ESP32).
- Nov2013-Mar2016
- > Designed the fastest grid solving robot at TechFest 2014, IIT-Bombay.

C/C++ STM32 AtMega1280 motor driver harness management NI Rio

ACADEMICS AND CO-CURRICULARS

TU Delft, Netherlands

MASTERS IN CONTROL AND EMBEDDED SYSTEMS

- > Satellite Orbit Determination: GPS, non linear least squares, orbit dynamics, tracking and prediction. Aug 2017-Sep2019 > 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.
- > Courses on numerical techniques, applied math, digital signal processing, op-amps and filters, wireless communication, electromagnetic wave theory, VLSI design, control systems.
- > MIT Media Labs: 🗹 wrist watch camera , Texas Instruments Challenge: 🗹 wrist watch multimeter

PUBLICATIONS

Research in drone racing featured at & Business Insider & Nature & Wired & Bloomberg & BBC. Dec 2019

Sept 2019 Thesis on state estimation and optimal control for racing drones.

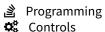
Advances in Intelligent Systems and Computing (Springer, Germany) on 🗹 LiFi Swarm Robots. Sept 2017

MOSFET based motor drivers with closed loop control at the 12th International IEEE Conference, Indicon. Dec 2015

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



← Embedded Languages

C/C++, SafeRTOS, FreeRTOS, PxROS, MATLAB, Python, OpenCV, ROS, multi-threading. LAPACK for uCs, HiL tests, Adaptive control laws, Kalman and RANSAC filtering, system identification. Infineon Aurix, STM32, ESP32, NI-Rio, MQTT, PCB design, oscilloscope, closed loop motor-control. English (fluent), Hindi (fluent), Gujarati (fluent), Dutch (A2).