



Nilay SHETH

Embedded | Control Systems

5 yrs of work exp. in the automotive, robotics & aerospace industry

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PROFESSIONAL EXPERIENCE

zepp solutions

Delft,
Netherlands

Feb 2021 - current

EMBEDDED & CONTROL SOFTWARE ENGINEER

- 2½ years at zepp solutions, an H₂ fuel cell systems company prominent in the automotive industry.
- > Safety critical drivers for 30 onboard sensors, control & diagnostics for 15 pumps/motors/valves.
- > Adding state estimators, kalman observers, J1939-21 communication & J1939-73 diagnostics stack.
- > Realizing software architectures for safety critical ISO26262 ECUs (engine control units).
- > 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 & software architectures.

MISRA C python Jenkins CI/CD J1939/CAN Infineon Aurix V-model static/dynamic/docs tools 4G telemetry

AlphaPilot

Lockheed
Martin, USA

Jan2021 - Jan2019

ROBOTICS PERCEPTION & CONTROL ENGINEER

- 2 years at AlphaPilot/AI Robotic Racing with TU Delft MAVLab, Lockheed Martin, MIT Aerospace.
- > Won the AI racing world championship against 432 research teams, with a prize of \$1M (highlights).
- > Designed the race drone's state estimation/localization, control & trajectory planning pipeline.
- > Firmware for PercEvite, Sense-and-Avoid air traffic control (European Single-Skies initiative).

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

Espressif

Systems,
Shanghai, China

Aug2017 - Jul2016

FIRMWARE APPLICATIONS ENGINEER

- A year at Espressif, prominent in the IoT space with inexpensive feature packed WiFi chips.
- > Developed applications in esp-idf Amazon Web Services for embedded platforms.
- > Speech analysis & audio processing with FFT, LAPACK in C on ESP32's tensilica Processor.
- > Motor control drivers: BLDC/brushed/servo & I2C/SPI/UART drivers for LCDs for HMI applications.

C FreeRTOS ESP32 ESP8266 esp-idf Matlab git AWS

SRA, VJTI

Society of
Robotics &
Automation,
Mumbai

Mar2016 - Nov2013

GENERAL SECRETARY & TEAM LEAD

- Robocon poses an annual semi-autonomous robotics challenge for countries in the Asia Pacific region.
- > Finalists in 2014 & 2016: taking our university international, winning the Panasonic Award for Innovation.
- > Mentored India's debut FIRST Robotics FRC6026 team to finish in the top 10 of Australian regionals.
- > Undertook workshops on embedded robotics for 300+ students around Mumbai (ARM, AVR, ESP32).
- > Won GridWarrior with 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

Sep2019 - Aug2017

M.SC. MASTERS OF SCIENCE 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)

May2016 - Aug2012

B.TECH, 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

- Dec 2019 Research in drone racing featured at Business Insider Nature Wired Bloomberg BBC.
- Sep 2019 Thesis on state estimation and optimal control for racing drones.
- Sep 2017 Advances in Intelligent Systems and Computing (Springer, Germany) on LiFi Swarm Robots.
- Dec 2015 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, ref: SRA, VJTI.
- Aug 2014 NHK Japan, Hindustan Times, Times of India: City College VJTI representing India internationally, ref: RoboCon 2014.

SKILLS

- Programming Git, C/C++, SafeRTOS, FreeRTOS, PxROS, MATLAB, Python, OpenCV, ROS, multi-threading.
- Controls PID, Kalman filters, state estimation, system identification, LAPACK, closed loop motor-control.
- Embedded Infineon Aurix, STM32, ESP32, NI-Rio, MQTT, PCB design, oscilloscope.
- Languages English (fluent), Hindi (fluent), Gujarati (fluent), Dutch (A2).