NITESH SUBEDI

Robotics R&D Engineer, NSD-ROBO, NSDevil

+9779846998395 Jawalakhel, Lalitpur, 44700 Lalitpur, Nepal nitesh-subedi nitesh-subedi

EXPERIENCE

R&D Engineer

North Star Developer's Village(NSDevil)

December 2021 – Ongoing Seoul, South Korea

- NSD-ROBO team leader. Working on autonomous navigation of wheeled robots in classroom environment, human robot interaction.
- Based on ROS2 with extensive use of Model Predictive Control(**MPC**), object tracking, object detection, machine learning, point cloud manipulation.
- Use of sensors(LiDAR, (Depth camera), Proximity), actuators, processor(Raspberry Pi and Jetson Nano) and communication systems and data filtering algorithms(EKF).

Suspension Design Team Member

Microlab Innovations

April 2020 – March 2021 Banglore, India

- Experienced the procedure for Computer Aided Engineering (CAE), FEA of the swing arm with a maximum speed of 150 Km/hr. and collaborated with the chassis design team to evaluate the necessary revisions in design and control of the suspension system.

Mechanical Engineering Internship

E-Bolt Tech Pvt. Ltd

April 2021 - May 2021 Lalitpur, Nepal

- Analysis of 2 wheeler suspension system was done. Collaborated with Electrical Department for the swing arm and suspension position.
- Model based simulation of the motorbike in Python and simulation of tire road interaction in **ADAMS-MATLAB** co-simulation.
- Experienced the process of the vibration control system collaborating with experiment department.

Mechanical Engineering Internship

Mantra Incorporation

June 2019 Lalitpur, Nepal

- Had a firsthand experience with the Computer Aided Engineering (CAE) modeling and analysis process for a sand screening equipment.

PROJECTS

Optimal Trajectory Generation For Autonomous Navigation Of Wheeled Robots

Department of Mechanical and Aerospace Engineering

April 2021 – March 2022 IOE, Tribhuvan University

- Final year project for the completion of bachelor's degree in Mechanical Engineering
- MPC based path planning
- 360 degrees LiDAR used for obstacle detectiion
- ROS as main working architecture with embedded systems like arduino and Raspberry Pi

Robots for ABU ROBOCON

Robotics Club

2018, 2019, 2020, 2021 IOE, Tribhuvan University

- In a lab facility provided by the university, I mentored for ABURobocon 2021 in China and oversaw a team of 21 undergraduate students for the mechanical design and control team for ABU Robocon 2020, Fiji. I also worked as a student team member for ABU-Robocon 2019, Mongolia, and ABU-Robocon 2018, Vietnam.
- Executed control of kicking mechanism mimicking the human leg using pneumatics to kick rugby ball to 12 m distance, four-legged walking mechanism, and ball shooting mechanism using the rollers using sensors like encoder, proximity, LiDAR and algorithms like EKF, MPC.
- Use of Controllers like Arduino and Raspberry Pi

MPC based Optimal Control of Quadcopter and Segway

Personal Project

May 2022 – ongoing

- Autonomous Control of Quadcopter with custom flight planner and controller
- Autonomous Navigation and control with self balancing of Segway

EDUCATION

Bachelor's in Mechanical Engineering

Tribhuvan University

August 2017 – June 2022

ACHIEVEMENTS

- Winner, Model-Based Design in Matlab/Simulink in DELTA 2.0 - organized by IOE Purwanchal Campus
- 2nd runner up, ABU Robocon 2022
- 2nd Runner up in Hult Prize National 2019
- Best Shuttlecock Award 2018 ABU Robocon
- Rohm Award, ABU Robocon 2019
- Tokyo Electron Award, ABU Robocon 2020

STRENGTHS AND SKILLS

C | Python | ROS & ROS2 | SQL | Solidworks | ADAMS | MATLAB & Simulink | Javascript

PUBLICATIONS

Journal Articles

- N. Adhikari, A. Pandey, A. Subedi, and **N. Subedi**, "Design of pelton turbine and bucket surface using non-uniform rational basis spline and its analysis with computational fluid dynamics," *Journal of the Institute of Engineering*, vol. 16, no. 1, pp. 41–50, 2021.

Conference Papers(Accepted)

- **N. Subedi**, P. Koirala, A. Kharel, A. Acharya, M. C. Luintel, and S. Maharjan, "MPC-based trajectory generation for wheeled robot navigation," VETOMAC, 2022.
- **N. Subedi**, P. Koirala, and M. C. Luintel, "Design, modeling, and control of active hydraulic suspension system for vehicles," VETOMAC, 2022.
- **N. Subedi**, A. Pandey, T. Bhusal, and M. C. Luintel, "Study of motorcycle rear suspension behavior with length of swing arm and its inclination angle," VETOMAC, 2022.

VOLUNTEERING EXPERIENCE

Workshop on science and robotics

Robotics Club

One Month Godawori Secondary School, Lalitpur

One Month Basic Solidworks Training

SOMAES & Robotics Club

2019, 2020, 2021 Pulchowk Campus, Lalitpur

Treasurer

IEEE Student Branch, Pulchowk Campus

2020 - 2021 IOE, Tribhuvan University

- Member in 2020 and promoted to the treasurer in 2021
- Organise various tech events

Mentor

Robotics Club

2021 - 2022 IOE, Tribhuvan University

- Mentoring for building robots participating in ABU ROBOCON

CERTIFICATIONS

Automotive Suspension and Chassis System Design and Engineering Fundamentals–RACE Software

Hexagon | MSC Software Indo-Pacific User Conference 2021 Attendance–MSC Software

Python Specialization–Coursera