

**EUROPEAN  
CURRICULUM VITAE  
FORMAT**



**PERSONAL INFORMATION**

Name	<b>SHETHIA FENIL PANALAL</b>
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E-mail	<a href="mailto:fenilpanalal.shethi2@unibo.it">fenilpanalal.shethi2@unibo.it</a>
Nationality	<b>INDIAN</b>
Date of birth	<b>31/08/1990</b>

**WORK EXPERIENCE**

- |   |  |
|---|--|
| <ul style="list-style-type: none"><li>• May 2023</li></ul>  | <b>Winner of the call for “Incarico per lavoro autonomo occasionale, Prot n. 00015333 del 26/04/2023”</b>  |
| <ul style="list-style-type: none"><li>• Name and address of employer</li><li>• Title</li><li>• Duration</li></ul>             | Department of Industrial Engineering, Alma Mater Studiorum – University of Bologna, Bologna Italy<br>Sviluppo ed implementazione di modelli e sistemi di controllo motore innovativi basati anche sull'utilizzo di Reti Neurali ed algoritmi di Machine Learning<br>150 hours  |
| <ul style="list-style-type: none"><li>• Main activities and responsibilities</li></ul>  | <ul style="list-style-type: none"><li>- Cad design of the components and engine test bench setup</li><li>- Collection and data analysis from the experimental setup</li><li>- Identification of innovative procedures to model various indices and evaluate the robustness and accuracy of the models.</li><li>- Simulation and experimental validation of the developed models and codes</li></ul>  |
| <ul style="list-style-type: none"><li>• May 2022 to October 2022</li></ul>  | <b>Winner of the scholarship (Borsa Di Formazione, Protocol Number 1168 of date 26/04/2022) for the topic: Models and control algorithms based on artificial intelligence and machine learning for the reduction of CO2 emissions in high-performance engines</b>  |
| <ul style="list-style-type: none"><li>• Name and address of employer</li><li>• Main activities and responsibilities</li></ul> | Department of Industrial Engineering, Alma Mater Studiorum – University of Bologna, Bologna Italy  |
|   | <ul style="list-style-type: none"><li>- Engine installation and conduction of test at the test bench</li><li>- Development of 0-D combustion models based on Artificial Intelligence</li><li>- Validation of models by comparing the results with experimental data</li><li>- Data analysis of the recorded data at the engine test cell using Matlab/Simulink</li></ul>   |
| <ul style="list-style-type: none"><li>• October 2021 to April 2022</li></ul>  | <b>Internship</b>  |
| <ul style="list-style-type: none"><li>• Name and address of employer</li><li>• Main activities and responsibilities</li></ul> | Engine Test Cell, Department of Industrial Engineering, Alma Mater Studiorum – University of Bologna, Via Terracini, 40131, Bologna.   |
|   | <ul style="list-style-type: none"><li>- Engine installation and conduction of test at the test bench</li><li>- Development of 0-D combustion models based on Artificial Neural Networks</li><li>- Developed a user-developed Matlab GUI to automatically train and test the Neural Networks</li><li>- Development of ANN-based, engine simulator</li><li>- Validation of the models and simulator by comparing the results with experimental data</li><li>- Data analysis of the recorded data at the engine test cell using Matlab/Simulink</li></ul> |
| <ul style="list-style-type: none"><li>• July 2015 to May 2019</li></ul>   | <b>Design Engineer</b>   |
| <ul style="list-style-type: none"><li>• Name and address of employer</li><li>• Main activities and responsibilities</li></ul> | Eros Elevators, 405 Bharat Industrial Estate, Sewri, Mumbai, 400015  |
|   | <ul style="list-style-type: none"><li>- Modelling and FEA simulation of mechanical components</li><li>- 2D drawings for manufacturing</li></ul>  |

- September 2013 to July 2015
  - Name and address of employer
    - Main activities and responsibilities
- July 2010 to September 2010
  - Name and address of employer
    - Main activities and responsibilities
- December 2009 to May 2010 & June 2008 to November 2008
  - Name and address of employer
    - Main activities and responsibilities

### **Cadd Engineer**

Cadd Center, A-306, Om Rachna, Sector-17, Vashi, Navi Mumbai, 400703

- Instructor on CAD software (Solidworks, Catia, Ansys, AutoCAD)
- 3D Modelling of components for outsourced projects

### **Short Internship**

Swastik Auto Works, S.K. Bole Road, Prabhadevi, Mumbai 400028

- Assisting in maintenance of passenger cars

### **Internship (Sandwich Trainee)**

TATA Motors Limited, Sector 15, MIDC, Pimpri Colony, Pimpri-Chinchwad, Pune, 411018

- Development of a function in a control system for automotive application
- Developing and simulating control circuits for automotive application in software environment
- Carried out mechanical assembly of a study 1.4L, inline 4-cylinder petrol engine

### **Tutorship**

- Winner of the call “**Selezione per l'attribuzione di una attività di tutorato relativa all'insegnamento denominato POWERTRAIN TESTING, CALIBRATION AND HOMOLOGATION [cod. 86462] dell'Anno Accademico 2023/2024 per il corso ADVANCED AUTOMOTIVE ENGINEERING**”.  
Duration: 30 hours, for the academic year 2023-2024
- Didactic Coordination of activities (about 164 hours):
  - Powertrain Testing, Calibration and Homologation (86462).  
Duration: 64 hours, for the academic years 2022-23 and 2023-24.
  - Modelling and Control of Internal Combustion Engines and Hybrid Propulsion Systems (86460).  
Duration: 64 hours, for the academic years 2022-23 and 2023-24.
  - Laboratorio di Motori A Combustione Interna (73096).  
Duration: 6 hours, for the academic years 2022-23 and 2023-24
  - Scuola internazionale di alta formazione MUNER in Automotive per una mobilità intelligente – Muner Higher Education School in automotive for intelligent mobility  
Duration: 30 hours, from November 2023 to December 2023
- Co-tutor for following master thesis activities (about 100 hours):
  - Title: PERFORMANCE ASSESSMENT OF RECURRENT NEURAL NETWORK-BASED ENGINE MODELS FOR THE PREDICTION OF COMBUSTION INDEXES UNDER TRANSIENT CONDITIONS, academic year 2022-2023, Author: Giovanni Busetti.  
Duration: 100 hours.
- Support for the exams for the following courses (about 96 hours):
  - Powertrain Testing, Calibration and Homologation (86462).  
Duration: 48 hours, for the academic years 2022-23 and 2023-24.
  - Modelling and Control of Internal Combustion Engines and Hybrid Propulsion Systems (86460).  
Duration: 48 hours, for the academic years 2022-23 and 2023-24.
- Part-time tutor at Alma Mater Studiorum – University of Bologna, supporting professors in the blended mode of teaching in March 2020 and March 2022  
Duration: 300 hours (150 hours in each year)

## EDUCATION AND TRAINING

- November 2022 to Present
  - Name of organization
    - Topic
  - Title of qualification
- September 2019 to April 2022
  - Name of organization
    - Thesis
  - Title of qualification awarded
- September 2010 to June 2019
  - Name of organization
    - Thesis
  - Title of qualification awarded
- August 2006 to July 2010
  - Name of organization
    - Thesis
  - Title of qualification awarded

### **PhD course in Automotive Engineering for Intelligent Mobility, Curriculum 2: Energy Systems, Powertrains, Vehicle Performance**

Alma Mater Studiorum - University of Bologna

Analysis and Advanced Modelling of Phenomenon and Technologies Related to the Implementation of New Propulsion Systems and Fuels to Reduce CO<sub>2</sub> Emissions

Doctor of Philosophy (PhD)

### **Master's Degree in Advanced Automotive Engineering – Advanced Powertrains, Bologna**

Motorvehicle University of Emilia Romagna (MUNER)

Master Thesis Title: "Development and validation of an artificial intelligence-based, control-oriented simulator of a high-performance spark ignition engine".

Master's Degree in Advanced Automotive Engineering (Final Grade: 107/110)

### **Bachelor's Degree in Mechanical Engineering**

K. J. Somaiya College of Engineering (Mumbai University)

Bachelor Thesis Title: "Study of design of airplane wings".

Bachelor of Engineering in Mechanical Engineering (Final Grade, 7<sup>th</sup> and 8<sup>th</sup> Semester: 973/1500, First Class, 84.2/110 in Italian Grade)

### **Diploma in Mechanical Engineering**

Agnel Polytechnic, Vashi (Maharashtra State Board of Technical Education)

Diploma Thesis Title: "Design and fabrication of windmill (microgeneration)".

Diploma in Mechanical Engineering (Final Grade, 7<sup>th</sup> and 8<sup>th</sup> Semester: 875/1025, First (distinction) Class, 99.3/110 in Italian Grade)

### **Training and Seminars**

- **Short course**, Alma Mater Studiorum - University of Bologna and KTH Engineering Mechanics, Topic: "Uncertainty Analysis for Engineers". By Prof. Henrik Alfredsson, Location: Online Lesson, Date: 13/02/2023 to 15/02/2023, Duration: 10 hours.
- **Short course @ Engine Test Cell**, Department of Industrial Engineering, Alma Mater Studiorum - University of Bologna, Topic: "An Overview of a Model-Based Combustion Control Algorithm and its implementation in a Rapid Control Prototyping System Designed for the Engine Test Bench". By Dott. Ing. Alessandro Brusa. Location: Engine Test Cell, Via Umberto Terracini 24/26, 40131, Bologna, Date: 15/12/2022 & 21/12/2022, Duration: 8 hours.
- **Short course**, Alma Mater Studiorum - University of Bologna and KTH Mekanik, Topic: "Short Course on Data Driven Methods in Engineering (Part 2)". By Prof. Ricardo Vinuesa, Location: Online Lesson, Date: 29/11/2022 to 12/12/2022, Duration: 12 hours.
- **Muner Winter School**, MUNER Higher Education, Topic: "Future of Automotive for Intelligent Mobility", Location: Online School, Date: 17/11/2022 to 07/12/2022, Duration: 90 hours.
- **Online Training**, Gamma Technologies, Topic: "GT-Suite Introduction Training", Location: Online, Date: 06/12/2021 to 07/12/2021, Duration: 9 hours.
- **Online Training**, Gamma Technologies, Topic: "GT-Suite Exhaust Aftertreatment Training", Location: Online, Date: 09/12/2021 to 10/12/2021, Duration: 16 hours.
- **Safety Training**, Alma Mater Studiorum - University of Bologna, Topic: "Module 1: Safety General Training", Location: Online, Date: 20/11/2020, Duration: 4 hours.
- **Safety Training**, Alma Mater Studiorum - University of Bologna, Topic: "Module 2: Safety Specific Training (Part 1)", Location: Online, Date: 20/11/2020, Duration: 4 hours.

## EXTRA-CURRICULAR ACTIVITIES

- February 2020 to Present
- Name of organization
  - Main activities
- January 2015 to January 2019
- Name of organization
  - Main activities
- August 2011 to August 2013
- Name of organization
  - Main activities

## PUBLICATIONS

- Description

### Powertrain Engineer

Unibo Motorsports Formula SAE Combustion Team, Bologna, Italy

- Energy consumption analysis for a preliminary concept of hybrid powertrain
- Developed a model for fuel film compensation using Matlab/Simulink
- Data analysis
- Technician

### Technical Inspector

Formula Bharat (Indian Formula SAE Race), India

- Technical Inspector
- Document Reviewer

### Powertrain Manager and Team Member

Orion Racing India, Formula SAE Combustion Team, Mumbai, India

- Engine calibration using Motec M400 ECU
- Data analysis
- Technician

Author and Presenter at international conferences, for the following papers:

- Journal Papers
  - Brusa, A., Shethia, F., Mecagni, J., and Cavina, N., "Advanced, Guided Procedure for the Calibration and Generalization of Neural Network-Based Models of Combustion and Knock Indexes," *SAE Int. J. Engines* 17(2):2024, <https://doi.org/10.4271/03-17-02-0009>
  - Brusa, A., Mecagni, J., Shethia, F., and Corti, E., "Model-Based Combustion Control to Reduce the Brake Specific Fuel Consumption and Pollutant Emissions under Real Driving Maneuvers," *SAE Int. J. Engines* 17(1):2024, <https://doi.org/10.4271/03-17-01-0007>
- Technical Papers
  - Shethia, F., Mecagni, J., Brusa, A., Cavina, N. et al., "Performance Assessment of a Model-Based Combustion Control System to Decrease the Brake Specific Fuel Consumption," SAE Technical Paper 2023-24-0027, 2023, <https://doi.org/10.4271/2023-24-0027>
  - Shethia, F., P., Mecagni, J., Brusa, A., Cavina, N., "Development and Software-in-the-Loop Validation of an Artificial Neural Network-Based Engine Simulator", SAE Technical Paper 2022-24-0029, 2022, <https://doi.org/10.4271/2022-24-0029> at SAE International CSM 2022: 22CSM-0036.

### Participation and Presentation at International Conference

- ICE2023, 16th International Conference on Engines and Vehicles for Sustainable Transport, Capri, Naples, Italy, September 2023. Presented the paper titled "Performance Assessment of a Model-Based Combustion Control System to Decrease the Brake Specific Fuel Consumption".
- CSM2022, 3rd Conference on Sustainable Mobility, Catania, Italy, September 2022

## MOTHER TONGUE

Gujarati

## OTHER LANGUAGES

- Reading skills
- Writing skills
- Reading skills

### English

Proficient (C1)  
Proficient (C1)  
Proficient (C1)

### Italian

- Reading skills
  - Writing skills
  - Reading skills
- Advanced Beginner (A2.2)  
Advanced Beginner (A2.2)  
Advanced Beginner (A2.2)

### Marathi

- Reading skills
  - Writing skills
  - Reading skills
- Proficient  
Competent  
Proficient

### Hindi

- Reading skills
  - Writing skills
  - Reading skills
- Proficient  
Competent  
Proficient

## TECHNICAL SKILLS AND COMPETENCES

- Computer Skills

### Applications

- Matlab/Simulink → Expert
- OBI Indicating System → Advance Beginner
- GT Power → Advance Beginner
- INCA → Proficient
- Solidworks → Expert
- PTC Creo → Proficient
- NX Cad → Proficient
- Catia → Proficient
- Ansys → Proficient
- AutoCAD → Proficient
- Microsoft Office → Proficient

## OTHER SKILLS AND COMPETENCIES

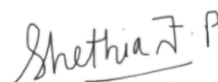
- Cycling
- Basketball
- Reading

## REFERENCE

- Name and title
  - E-mail
  - Telephone

Vinay Parab, P. Eng., MSc Mechanical Engineer  
[vparabmech@gmail.com](mailto:vparabmech@gmail.com)  
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BOLOGNA, 25/01/2024



Fenil Panalal Shethia

## DICHIARAZIONI SOSTITUTIVE DI CERTIFICAZIONI

(art. 46 D.P.R. n. 445/00)

## DICHIARAZIONI SOSTITUTIVE DELL'ATTO DI NOTORIETA'

(art. 47 D.P.R. n. 445/00)

Il sottoscritto Shethia Fenil Panalal, C.F. SHTFLP90M31Z222G, nato a Mumbai, India il 31/08/1990 e residente in Via Della Pietra, sesso maschile, a tal fine e consapevole delle sanzioni penali, nel caso di dichiarazioni non veritiere, di formazione o uso di atti falsi, richiamate dall'art. 76 del D.P.R. 445 del 28 dicembre 2000

### DICHIARA

che i dati anagrafici, gli stati, qualità personali, informazioni e titoli contenuti e dettagliati nel presente Curriculum sono corrispondenti al vero e di essere in possesso di tutti i titoli in esso riportati.



Bologna, 25 Gennaio 2024

Fenil Panalal Shethia

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