Akhil Nandan
Nandanam,
Cherunniyoor,
Thiruvananthapuram (Kerala, India) - 695142
Email-id : **akhilnandangate2019@gmail.com**
Mobile No.: **9495396515**
Alt Mob No.: **9136268096**

ACADEMIC DETAILS

Degree/Board	Institute	Year	CPI/%
M.Tech in Electrical Machines	College of Engineering Trivandrum, Kerala	2021	9.22
B.Tech in Electrical and Electronics	T. K. M. College of Engineering, Kerala	2016	8.36
CBSE Class XII	M. G. M. Model School, Ayiroor, Kerala	2012	93.4%
CBSE Class X	M. G. M. Model School, Ayiroor, Kerala	2010	10

WORK EXPERIENCE

- **Modelon India, Trichy, Tamil Nadu: Simulation Engineer** (July 2022 - Present)
  - Modelica library developer in R&D of Energy and Electrification verticals.
  - Performing optimization and simulations for Integrated energy systems using Optimica extenstion and python workflows.
  - Pre-sales and Post-sales support for leading OEMs as a part of service projects.
- **Indian Institute of Technology Bombay, Mumbai: Project Research Assistant** (Aug 2021 - Jun 2022)
  - Developed traction control module for train simulations for the High Speed Railway Innovation Centre, India.
  - Developed and implemented train movement algorithm and schedule for design and validation of sizing using load flow simulations in Octave.
- **Indian Institute of Technology Bombay, Mumbai: Research Intern** (May 2021 - Aug 2021)
  - Bench-marking GSEIM simulation tool with MATLAB/Simulink with respect to simulation times under the supervision of Prof. M. B. Patil, EEE Dept., IIT Bombay
- **Entuple Technologies, Thiruvananthapuram: Project Intern** (Oct 2019 - Mar 2020)
  - Student intern in the project titled as "Rare Earth Magnet free motor drive for 3 wheeler application"
  - Performed finite element analysis of Synchronous Reluctance Motor using ANSYS RMXprt
  - Performed online PID controller tuning using Particle Swarm Optimisation algorithm using digital-twin in Matlab [Experimentation].
- **Tata Consultancy Services, Mumbai: System Engineer** (Mar 2017 - Jun 2018)
  - Part of TCS internal search application *Enterprise Search* DevOps team.
  - Development and maintenance of search application modules for handling user requests based on on Java Spring Framework, REST API, Redis, Angular JS and HTML.

MTECH THESIS

Title: Model Predictive Controllers for Induction Motor Drives

Supervisor: Dr. Dinesh Gopinath, EE Department, CET Thiruvananthapuram

Description

- Development of three model predictive control strategies for Induction motor drives in both Simulink and OpenModelica.
- Comparison study of drive performances of model predictive controllers with classical DTC.
- Development of reusable library package of model predictive controllers for Induction machine in OpenModelica.
- Brief case study on causal modeling in Simulink and acausal modeling in OpenModelica.

ACADEMIC WORKS

- **Model Predictive Control Method of Torque Ripple Reduction for BLDC motor** (Dec 2021-Aug 2022)
  - Designed and simulated torque ripple control using model predictive duty cycle control for BLDC speed drive with 120 degree commutation in Simulink.
- **Benchmarking GSEIM with Simulink with respect to simulation times** (Dr. Mahesh B. Patil, Dept. of EE, IIT Bombay) (Jun 2021 - Aug 2021)
  - Comparison of simulation times of causal models of PMSM and IM drives developed in recently introduced GSEIM tool and Simulink.
- **Library development of Model Predictive Controller for AC motors in OpenModelica** (Dr. Dinesh Gopinath, Dept. of EE, CET Thiruvananthapuram) (Dec 2020- Jun 2021)
  - Developed a library package named **Model_Predictive_AC_Controller** in OpenModelica containing motor and controller models for Induction Motor and PMSM drives.
- **Design and modelling of coreless axial flux actuator for car engines using ANSYS Maxwell** (Prof. Bindu V. R., Dept. of EE, CET Thiruvananthapuram) (Oct 2019- Jan 2020)
  - This was an interdisciplinary project with the Dept. of Mechanical Engineering, CET Thiruvananthapuram to design and perform electromagnetic and force analysis of an axial flux actuator to replace stepping valves in car engines.
- **Rare Earth Magnet free motor drive for 3 wheeler application** (Entuple Technologies, TrEst Park, Thiruvananthapuram) (July 2019- Mar 2020)
  - This work involved finite element analysis of 4.5KW Synchronous Reluctance Motor using RMXprt to reduce torque ripple and improve motor efficiency based on machine design optimization.
- **B.Tech Project: Braille script reader for visually challenged based on Atmega 328P** (Prof. Sunitha Beevi K., Dept. of EEE, TKMCE, Kollam) (Nov 2015- Mar 2016)
  - Developed a wearable device for two way communication for blind with analog keypad and vibration motors using Atmega 328P.

TECHNICAL SKILLS

- **Software Tools**:
  - **Modelling Tools**: Dymola, Modelon Impact, OpenModelica, MATLAB/Simulink, Scilab, Octave, ANSYS Maxwell, LTSpice, Simscape.
  - **Source Code Manangement**: GitHub, GitLab, and SVN
  - **Product Management**: Jira
  - **CI/CD**: Jenkins
- **Programming Language**: Matlab, Modelica, Octave, Java, C/C++, Python, LaTeX and HTML.

MEDIA

- LinkedIn: `https://www.linkedin.com/in/akhil-nandan-345b59202`
- GitHub: `https://github.com/AkhilNandan`
- Stackoverflow: `https://stackoverflow.com/users/16020568/akhil-nandan`

ACADEMIC COURSES

Dynamics of Power Converters, Design of Power Electronic Systems, Modelling of Electrical Machines, Advanced Electric Drives, Finite Element Modelling, Electric Drives Lab.

INTERESTS

- Open source software support and student collaborations.
- Sports: Cricket, Badminton and Football