

I-STEM Software Request - Guide Approval Form

User Details

- **Name of Researcher:** JITENDRA DUDARAM CHOUDHARY
- **User Type:** Master's Program
- **Institution Name:** Malaviya National Institute of Technology Jaipur
- **Institutional Contact No:** 8233150499
- **Research Topic:** Machine Learning based fault localization for Air-cooled cylindrical Lithium-ion batteries

Software Request Details

- **Software Name:** COMSOL Multiphysics (with Basic+ Advanced Module: AC/DC Module, CFD Module, Heat Transfer Module, LiveLink for MATLAB, LiveLink for Simulink, Battery Design Module.)
- **Justification for Software Request:** The COMSOL Multiphysics software will be used for advanced numerical modelling of a lithium-ion battery pack with a focus on thermal management and safety analysis. The study involves coupled electro-thermal modelling to capture heat generation, temperature distribution, and voltage-current behaviour under normal and faulty operating conditions. The software will also be used to simulate fault localization scenarios to generate high-fidelity data for intelligent algorithm development. In addition, computational fluid dynamics (CFD) analysis will be performed to model airflow patterns and their influence on cell temperature within an air-cooled battery pack, enabling optimization of thermal performance and early fault detection strategies.

Guide/Supervisor Approval

I, Aneesh Prabhakar,

- Confirm that the above-mentioned researcher is affiliated with our institution
- Have reviewed the software request and its relevance to the researcher's academic work
- Approve the software request for research purposes

Approval Confirmation

- I approve the software request
- The software aligns with the researcher's research objectives
- The request meets the institutional research guidelines

Guide/Supervisor Signature:

Date: 16/12/2025

Official Stamp/Seal Space for Institutional Stamp

Important Notes

1. This form must be signed and scanned
2. The scanned copy must be uploaded with the software request
3. Electronic signatures are acceptable if from an official institutional email



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