

I-STEM Software Request - Guide Approval Form

User Details

- **Name of Researcher:** MEAGAN MATHEW
- **User Type:** Ph.D. Scholar
- **Institution Name:** Indian Institute of Information Technology, Kottayam
- **Institutional Contact No:** 0482 2202100
- **Research Topic:** Design and implementation of piezoelectric cantilever beam energy harvesters

Software Request Details

- **Software Name:** COMSOL MULTIPHYSICS
- **Justification for Software Request:**

The research focuses on the design and implementation of piezoelectric cantilever beam energy harvesters utilizing railway track-borne vibrations. **COMSOL Multiphysics** is required to model, simulate, and optimize the coupled electromechanical behaviour of the proposed energy harvester and to analyse its dynamic response under low frequency vibration conditions. The **Structural Mechanics Module** is needed for modal, stress, and frequency-domain analyses of the cantilever structure, while the **AC/DC Module** is required to study the piezoelectric coupling and electrical output characteristics. The **Optimization Module** will be used to optimize geometric and material parameters to maximize energy harvesting performance. **LiveLink™ for MATLAB®, Simulink®, and CAD tools** is required for automation of simulations, parametric studies, and integration of numerical models with data analysis and optimization algorithms. Access to these software tools is therefore essential for the successful execution of the proposed doctoral research and for obtaining accurate and reliable results.

Guide/Supervisor Approval

I, Dr. Minu A Pillai, Assistant Professor, Dept. of ECE, IIIT Kottayam,

- 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: 03/07/2026

Official Stamp/Seal:

