

I-STEM Software Request - Guide Approval Form

User Details

- Name of Researcher: YUVRAJ
- User Type: Masters
- Institution Name: INDIAN INSTITUTE OF TECHNOLOGY DELHI
- Institutional Contact No: +91 011-2659-7135
- Research Topic: PHOTONICS PROCESSORS FOR AI

Software Request Details

- Software Name: COMSOL Multiphysics 6.0(BASIC+ADVANCE MODULE)
- Justification for Software Request: The project involves the design and simulation of a photonic processor architecture based on microring resonator (MRR) structures, which are fundamental components in integrated photonic circuits due to their compact footprint, wavelength selectivity, and high-speed modulation capabilities. To accurately model the optical behavior of single and coupled MRRs—including resonance wavelength, Q-factor, and coupling efficiency—finite element analysis is essential. COMSOL Multiphysics provides a robust simulation environment with customizable physics interfaces for electromagnetic wave propagation, enabling precise control over geometry, material properties, and boundary conditions. Its Wave Optics Module is particularly suited for analyzing photonic structures and supports parametric sweeps and eigenfrequency studies critical to this research. The software's ability to simulate complex photonic interactions and visualize field distributions makes it indispensable for optimizing the processor architecture and validating its performance for AI-related signal processing tasks.

Guide/Supervisor Approval

I, Dr. DEEPAK JAIN (Guide/Supervisor Name),

- 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: _____

Deepak Jain

Date: _____

Official Stamp/Seal: [Space for Institutional Stamp]

Dr. Deepak Jain / Associate Professor
Optics and Photonics Centre
Indian Institute of Technology Delhi
New Delhi-110016

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

