

I-STEM Software Request - Guide Approval Form

User Details

- Name of Researcher: AYUSH SHANKER TRIPATHI
- 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 micro ring 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 behaviour 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 customisable physics interfaces for electromagnetic wave propagation, enabling precise control over geometry, material properties, and boundary conditions. Its Wave Optics Module is particularly suited for analysing photonic structures and supports parametric sweeps and eigenfrequency studies critical to this research. The software's ability to simulate complex photonic interactions and visualise field distributions makes it indispensable for optimising 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: _____

Date: _____

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

प्रो. दीपक जैन / Prof. Deepak Jain
सह. प्रोफेसर / Associate Professor
प्रकाशिकी एवं फोटॉनिक्स केंद्र
Photonics and Photonics Centre
भारतीय प्रौद्योगिकी संस्थान दिल्ली
Indian Institute of Technology Delhi
हौज खास, नई दिल्ली - 16/Hauz Khas, New Delhi-110016