PMRF-ISSS Teaching Programme

Prime Minister Research Fellowship students' teaching requirement facilitated by the Institute of Smart Structures and Systems

Module PMRF-ISSS001/IV/2026

Transformers in Control

Name of the PMRF student
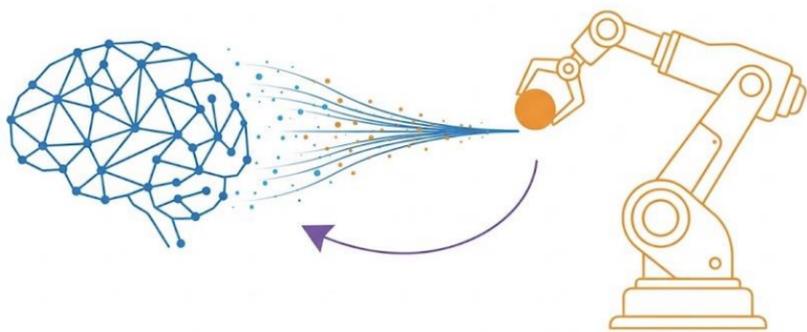
Ratnangshu Das

Required background of the students taught

Introductory level course for students of EE and CSE, particularly interested in AI and robotics

Prerequisites: Linear Algebra, Calculus, Nonlinear Optimization, Pattern Recognition and Machine Learning.

Online session coordinator

Will be chosen from the list of registrants

Details of the content of the module

Week 1: Preliminaries of Neural Network Architectures (Feedforward, Convolutional, Recurrent NNs)

Week 2-3: The Transformer Architecture

Week 4: Language Modelling

Week 5: Decoder-only model: Generative Pre-trained Transformer (GPT)

Week 6: Encoder only model: Bidirectional Encoder Representation of Transformers (BERT)

Week 7: Encoder-Decoder models: BART, T5

Week 8: Tuning model performance

Week 9-10: An overview of recent LLMs

Week 11: Preliminaries of linear algebra and control theory

Week 12: Connecting LLMs to control theory and a way ahead!

Schedule of the module

Start Date: 6 January, 2026

Live lectures will be conducted (or recorded lectures might be uploaded) on Tuesdays and Fridays at 10:30 am to 12:30 pm (50-60 Lectures)

End Date: Tentatively by end of April'26

Meeting link : Will be shared later

Link

Contact email ID: isss.forum@gmail.com

Registration link: https://forms.office.com/r/EwEy7Xs6C5