November 3-8, 2020

Overview

This course comprises of three modules, basics of matrix analysis, introduction to google colab andthe LaTeXprocessor on Overleaf. The objective is to provide a thoeretical solution to a matrix problem, computationally verify using python and present it through a LaTeXdocument.

Modules

Python through Google Colab

1. **Executing a sample python code in colab.**
2. **Generating figures and using python libraries for matrix computations.**
3. **Using google drive as a file manager for colab**

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Overleaf for Latex

1. **Generating a sample pdf from a latex file using overleaf.**
2. **Writing matrix/vector equations in latex.**

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Matrix Analysis

1. **Vector norms and products**
2. **Linear forms: Matrix row operations and inversion.**
3. **Quadratic forms: Eigenvalues and eigenvectors, affine transformation**
4. **Matrix decompositions: QR and SVD.**

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Schedule

November 3 **9:00-21:00**, *Python through Google Colab* .

November 4 **9:00-21:00**, *Overleaf for Latex* .

November 5 **9:00-21:00**, *Vector norms and products* .

November 6 **9:00-21:00**, *Linear forms: Matrix row operations and inversion.* .

November 7 **9:00-21:00**, *Quadratic forms: Eigenvalues and eigenvectors, affine transformation* .

November 8 **9:00-21:00**, *Matrix decompositions: QR and SVD.* .

You should attend if

This course is designed for teachers. Anyone with a working knowledge of high school coordinate geometry can benefit from this course. Teachers will learn how to use python for matrix computations and write math documents using latex.

Course Coordinator

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Dr. G. V. V. Sharma is an Associate Professor in the Department of Electrical Engineering at IIT Hyderabad. He received his PhD in Electrical Engineering from Indian Institute of Technology, Bombay, M. Sc. (Engg.) from Indian Institute of Science, Bangalore, and B. Tech. from Indian Institute of Technology, Guwahati. Before joining IIT Hyderabad as a faculty, he was employed in the software industry. He works on wireless technologies, but has a passion for developmental engineering; taking technology to the masses. He is currently the coordinator of the Teaching Learning Centre at IIT Hyderabad. .