

An Indian-Australian research partnership

Project Title: Codes for distributed storage

Project Number IMURA0495

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Research Academy Themes:

Highlight which of the Academy's Theme(s) this project will address?

(Feel free to nominate more than one. For more information, see www.iitbmonash.org)

1. **Advanced computational engineering, simulation and manufacture**
2. Infrastructure Engineering
3. Clean Energy
4. Water
5. Nanotechnology
6. Biotechnology and Stem Cell Research

The research problem

Define the problem

With the advent of internet and the requirement of massive data storage systems, the question of efficient distributed storage of massive data has become increasingly important in the present day. The efficient recovery of data by various nodes, efficient repair of a failed storage node, security issues arising out of nodes corrupted by malicious softwares or nodes which are hacked are some of the aspects which need to be considered while designing good distributed storage systems. Finding optimal trade-offs for various parameters, as well as designing codes which meet these optimal trade-off points are the goal of this project. The area has seen high degree of activity in the recent past, and this will require both strong information theory and algebra background.

Project aims

Define the aims of the project

The project aims at finding optimal trade-off in various distributed storage-problems over networks and also finding codes to achieve optimal trade-offs.

Expected outcomes

Highlight the expected outcomes of the project

A minimum of three publications in Q1 journals in the field
Possible contribution to future standards.

How will the project address the Goals of the above Themes?

Describe how the project will address the goals of one or more of the 6 Themes listed above.

Capabilities and Degrees Required

List the ideal set of capabilities that a student should have for this project. Feel free to be as specific or as general as you like. These capabilities will be input into the online application form and students who opt for this project will be required to show that they can demonstrate these capabilities.

It is mandatory to have a very solid MTech level background in advanced digital communications, information theory, and linear algebra. Applicants not having done at least two out of these three formal courses in their masters with good grade/percentage will not be called for interview.

Degree in Electrical Engineering/Electronics and Communication Engineering is mandatory.

Potential Collaborators

Please visit the IITB website www.iitb.ac.in OR Monash Website www.monash.edu to highlight some potential collaborators that would be best suited for the area of research you are intending to float.