IITB-Monash Research Academy

Indian Institute of Technology Bombay | MONASH University

An Indian-Australian research partnership

Project title: Novel projector camera systems

Project number: IMURA0091

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Research Academy theme/s

1. Advanced computational engineering, simulation and manufacture
2. Infrastructure Engineering

The research problem

With the rapid progress in projection technologies and dwindling cost of projectors, projectors are now, from a business perspective, deployable in a multitude of environments. However, from a research prospective, ad-hoc environments are non-ideal for projection -- while eminently acceptable for computational tasks. For example, the display surface in an exhibition floor may not be planar and white in color. Further there could be significant ambient light. This can lead to degradation in the quality of image as perceived by the viewers. If a camera is used to provide feedback to the system, the projected image can be pre-warped to improve the quality of the perceived image.

Project aims

This project aims to address issues related to perceived image quality when a projector is deployed in a non-ideal environment. Various issues like defocus blur, background texture and environment light impact will be dealt with.

Expected outcomes

Prototype implementations of projector camera systems, with associated mathematical model.

Which of the above Theme does this project address?

Advanced computational engineering, simulation and manufacture.
Infrastructure Engineering

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

Novel usage of projectors and cameras is likely to make displays more ubiquitous.