# COMP5411 Rendering Project Proposal
# Magnifying Lenses

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# Project Description

## Rendering Lenses

- Render a standard scene with objects and lighting, and include interactive magnifying lenses
- Simulate and render all the kinds of distortion associated with lenses

# Project Description

## Features

- Varying the lighting and objects in the scene behind the lenses
- Varying parameters of the lens (geometric properties)
  - Calculate the optical parameters from the geometric description
- Interactively move around the lenses in 3D space
- Simulating light dispersion through the lenses (chromatic aberrations)
- Simulating various kinds of lens distortions (such as barrel or pincushion distortion)

## Challenges

- Implement realistic approximations as shaders (rather than ray tracing)
- Calculate optical properties of lenses from (customizable) geometric description