# Project Synopsis / Project Concept Document

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| Project Title | 3D Point Cloud Variation Measurement |
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| Created By | Harshika Jain, Subodh Sondkar |
| Client | Mr. Anil Kumar Upadhyay, Mrs. Chitralekha Upadhyay, Five Fingers Innovative Solutions |

## Description

3-D printing is done by using 3-D models called as point clouds. Traditionally, such models were handmade by technical experts. But such models take a lot of time to make and aren’t complex enough to capture all the properties of daily life objects. It would be of great help if the process of creating point clouds would be automated.

Our project aims to extract the point cloud of a stated object from a 3-D video, so that we can get the complexity of the model that is required in a short amount of time. This can be used to automate 3-D printing (if we use 3-D photo). Moreover, we also aim to calculate the changes in the properties of the point cloud to determine what happens to the object and when.

## Profile of Users and Usage Model

3-D printing can be automated using this project by only creating the point cloud of an object from a 3-D photo (one frame from a 3-D video). Companies and individuals involved in 3-D printing can do it quicker and without using manpower by printing the created point cloud.

It can be used by machine learning projects which aim to see what happens to objects on certain environmental inputs. For example, a robotic system which automatically cuts a piece of wood using cutting tools to create sculpture ornaments can use reinforcement learning to learn the angles to place the cuts to sculpt well.