Part1

Test/src/test2: for different camera models, first project a 3d point then unprojectit, to compare with the original 3d point whether they are approximated equal.

Part2

Robust curve fitting is more robust handling with the outliers. Because it uses Cauchy loss as the loss function. Cauchy Loss is one of the loss functions that ships with Ceres Solver. The argument specifies the scale of the loss function. As a result, the fitted curve moves back closer to the ground truth curve.

Part3

Command line parameters: dataset_path, cam_model

Based on the solver brief result I made such table so that we can evaluate how well the camera models the lenses that were used to collect the dataset., note that the
, it will evaluate how well the model reduces the error in general

Camera_model	Time/s	Convergent?	Cost_Change_Rate	Initial cost
ds	0.464186	yes	5.353019e+06 / 5.353182e+06 = 99.99696%	5.353182e+06
Kb4	0.286070	yes	5.787887e+06 / 5.788049e+06 = 99.99720%	5.788049e+06
pinhole	0.047944	yes	0.000000e+00 / 1.565735e+05 = 0	1.565735e+05
eucm	0.249028	yes	5.353019e+06 / 5.353182e+06 = 99.99696%	5.353182e+06

From the table we can see the the initial cost measures the cost before the optimization, apparently pinhole camera has the least initial cost, then eucm and ds share almost the same initial cost, the worst initial cost is kb4, with the largest cost.