PCL :: Registration

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Outline

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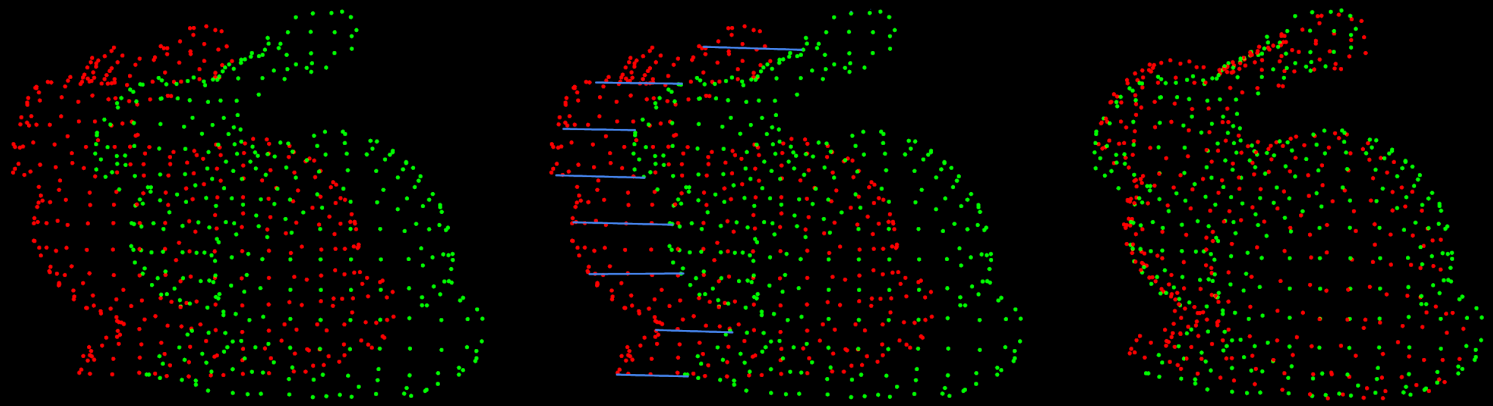
ICP Registration



Given an input point cloud and a target point cloud

1. determine pairs of corresponding points,
2. estimate a transformation that minimizes the distances between the correspondences,
3. apply the transformation to align input and target.

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Example 1

So let's look at some code: 04_sample_1.cpp

```
#include <pcl/registration/icp.h>
// ...
  pcl::IterativeClosestPoint<pcl::PointXYZ, pcl::PointXYZ> icp;

  icp.setInputCloud (cloud1);
  icp.setInputTarget (cloud2);

  icp.setMaximumIterations (20);
  icp.setMaxCorrespondenceDistance (0.1);

  icp.align (*cloud2);

// ...
```

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ICP and Kinect

openni-icp-reg

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RANSAC

pairwise-incremental-registration.cpp

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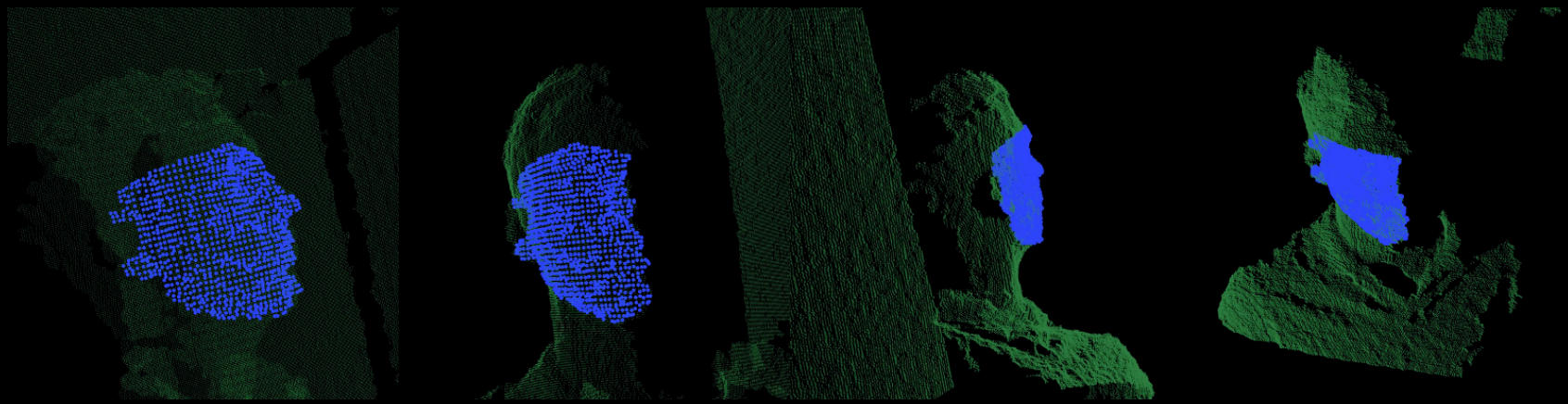
Template Alignment



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Future Algorithms

- GICP integration (next week)
- loop detection
- SLAM graph generation
- graph optimization (using G2O, ELCH)