

Profile Circle Advanced Tool User Manual

Purpose

Fit a circle using least square method based on chosen points under Uniform/Raw Profile scan mode. The tool supports two different fitting methods: Iterate and Ransac. The method named “Iterate” removes outliers iteratively and fits the final circle using remaining points. The other method is based on the Ransac algorithm. It fits the circle many times and selects a most likely result.

Inputs

Stream:	Profile/Merged
Source:	Top

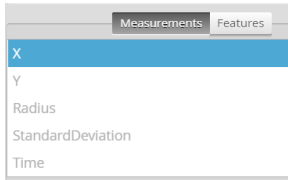
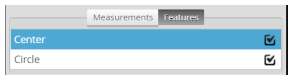
Name	Description
Stream	It's possible for more than one type of data to be available for a tool as input. You use the Stream drop-down in a tool to choose which type. If only one type of data is available for a tool, the Stream drop-down may not be displayed.
Source	The sensor, or combination of sensors, that provides data for the tool's measurements.

Parameters

Stream:	Surface Section/Raw Profile
Source:	Top
Number of Regions:	1
Region1	 
Fitting Method:	Iterative Least Squares
Outlier Fraction:	90 %

Name	Description
Number of Regions	Up to 16 regions can be configured to choose points to fit the circle. If 0 (Use all profile) is selected, then all points in the current frame will be used to fit the circle.
Fitting Method	It supports two fitting methods <ul style="list-style-type: none"> - Iterative Least Squares. This is a legacy method for backwards compatibility purposes only. - Iterative Robust Least Squares. This is generally a more preferable method. - RANSAC.
Outlier Fraction	Range from 0% to 100%. Suppose m points have been chosen from regions, if this parameter is not equal to 0, then Outlier Fraction * m points will be considered noises and be removed iteratively. The remaining (1-Outlier Fraction) * m points in CYAN color will be used to fit the final circle.
Iterate Times (used with Ransac method)	This parameter is used to determine the iteration times in the ransac algorithm.
Tolerance (used with Ransac method)	This parameter is used to determine the fitting accuracy in the ransac. Usually, this parameter could be set to the acquisition accuracy multiplied by a factor(like 1.2).

Outputs

Measurements	X	X coordinate of the circle center	
	Y	Y coordinate of the circle center	
	Radius	Radius of the circle in mm	
	StandardDeviation	Standard deviation for points involved in fitting circle from the center point	
	Time	Running time for the tool in ms	
Features	Center	The center point of the final circle	
	Circle	The final circle	

Application Example

