Robotforum - Support and discussion community for industrial robots and cobots   /   Forum   /   Industrial Robot Support and Discussion Center   /   KUKA Robot Forum

Which type of SPLINE is the robot using?

👤 diglo   🕐 Jul 15th 2015   ☑ Thread is marked as Resolved.

diglo

Reactions Received: 4
Trophies: 1
Posts: 142

☆

Jul 15th 2015

Hi everyone!

Which kind of SPLINE is the KRC4 using to interpolate the points?

I have made these conclusions:

Hermite? NO, because the tangent at each point needs to be specified and we don't pass that info in the spline instruction
Bezier? NO, because it's not designed to interpolate (pass though) the point set.
Catmull-Rom? I have no idea
Natural Cubic? Possible, because it's interpolating the point set and does not require other parameters
B-Spline? NO, because it's not interpolating the point set.

What do you think?

AD

Fubini

Reactions Received: 116
Trophies: 6
Posts: 1,098

Jul 15th 2015

Hi,

polynomial of order 5. But why do you need to know?

Fubini

Thank you fubini.
How did you get that information?

I want to implement a software which allows to design paths offline, so I have to draw the path that the robot will trace with the TCP.

diglo

diglo

Reactions Received: 4
Trophies: 1
Posts: 142

Jul 15th 2015

Fubini

Quote

How did you get that information?

> By implementing the spline into the KSS. Reproducing this in a non KUKA-Software will probably be difficult since many special adaptions are made: SLIN is handled different to SPL and SPTP, Splineblocks are different to nodal Splines, you need higher order derivatives estimates to calculate all spline coefficients, …

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I won't be able to tell any internal stuff because most of it is secret KUKA knowledge. Hence recreating the same spline geometry would be pure luck. But there are offline simulation tools (Delmia, Robcad, Kuka Sim) that use DLLs distributed by KUKA to be able to recreate this type of stuff.

Fubini

Jul 15th 2015

I also remember seeing (possibly a post by you) that it was uniform knot weighting….this is important, and certainly changes the output(from the cad end). We have a program that attempts to write this code offline as well, but we haven't had the time to actually compare the executed path to the desired path. Maybe one day kuka will make a useful OLP package and then the world will not have to struggle with the finer points of such things! Or at least share that dll 😉

wes_mcgee

Reactions Received: 1

Fubini

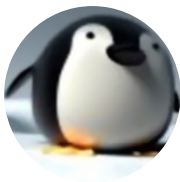Reactions Received: 116
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Jul 16th 2015

Hi,

I do not know if anyone can order it and what is the current functional range, but there is a technology package called RCS-Module by KUKA. This basically contains the before mentioned DLL. The module itself follows the RRS Interface Specification. RRS stands for "Realistic Robot Simulation" and implements a standard for offline programming of robots defined by a consortium consisting of all major automotive and robot manufacturers. CAD programs like Robcad, Delmia and others use different RCS modules supplied by the robot companies for their simulation.

Maybe talking to your local KUKA sales representative might help here.

Fubini

> Edited once, last by Fubini (Jul 16th 2015).

diglo

Reactions Received: 4
Trophies: 1
Posts: 142

Jul 16th 2015

@Fubini , so you still are a sw developer in Kuka?

Good to know! 😊🍺 🍺😊

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