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Optimizing Wiring Routes in Airplanes

System Overview

Team Name: Maze Runners

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System & Subsystems

- System: Electrical Wire Routing Optimization (EWRO) Software Application
- Subsystems
 - Graphical User Interface (GUI)
 - Input processing function
 - Output processing function
 - Weighting constraint analysis of electrical wire routing placement
 - Mathematical model for providing analytical solution of spline equations

Input & Output Structure

Inputs

Wiring constraints (i.e. curvature, separation)

Quantitative table

2D matrix

CAD aircraft model for mapping

3D CAD aircraft model (Solidworks)

Oľ

3D mesh generation (Pygmsh)

Blackbox

EWRO software

Outputs

A set of cubic spline equations

3D CAD model

System Interactions

Technical Design
Team

Constraint
Hierarchy

Software

Wiring Technicians

Wiring Technicians

Manufacturing Team

Input Processing Function Wiring Constraints **Graphical User** Quantitative 2D matrix table Interface 3D CAD model for mapping Accessible via GUI Output Processing Function **Spline Equations Generated** by Mathematical Model for Weighting factor analysis of constraints **Wiring Routes** for electrical wire routing 3D Model of Electrical Wiring Placement **Generator Function**

Questions?