Crash Test Data Analysis

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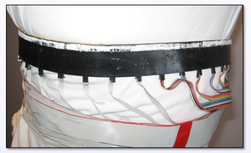
Chestband Description

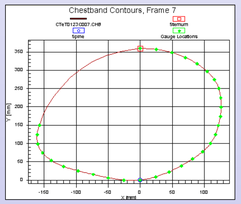


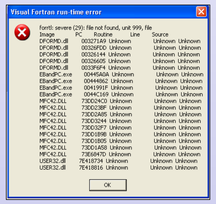
View of a typical chestband setup

- Used to measure the deformation of a thorax during a collision
- Composed of 40-80 strain gages
- Measures curvature in rad/mm

RBandPC

Current chestband analysis program used at TRC





Left: Example of output from RBandPC
Right: Sample RBandPC error message

RBandPC Limitations:
Poor user-friendliness Poor reliability
Difficult navigation Poor functionality
Unrealistic representation

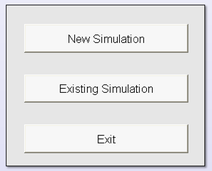
Project Goals

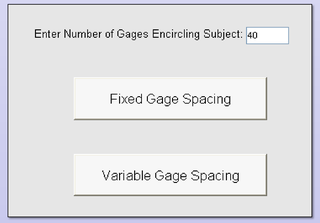
Create new program in MATLAB:

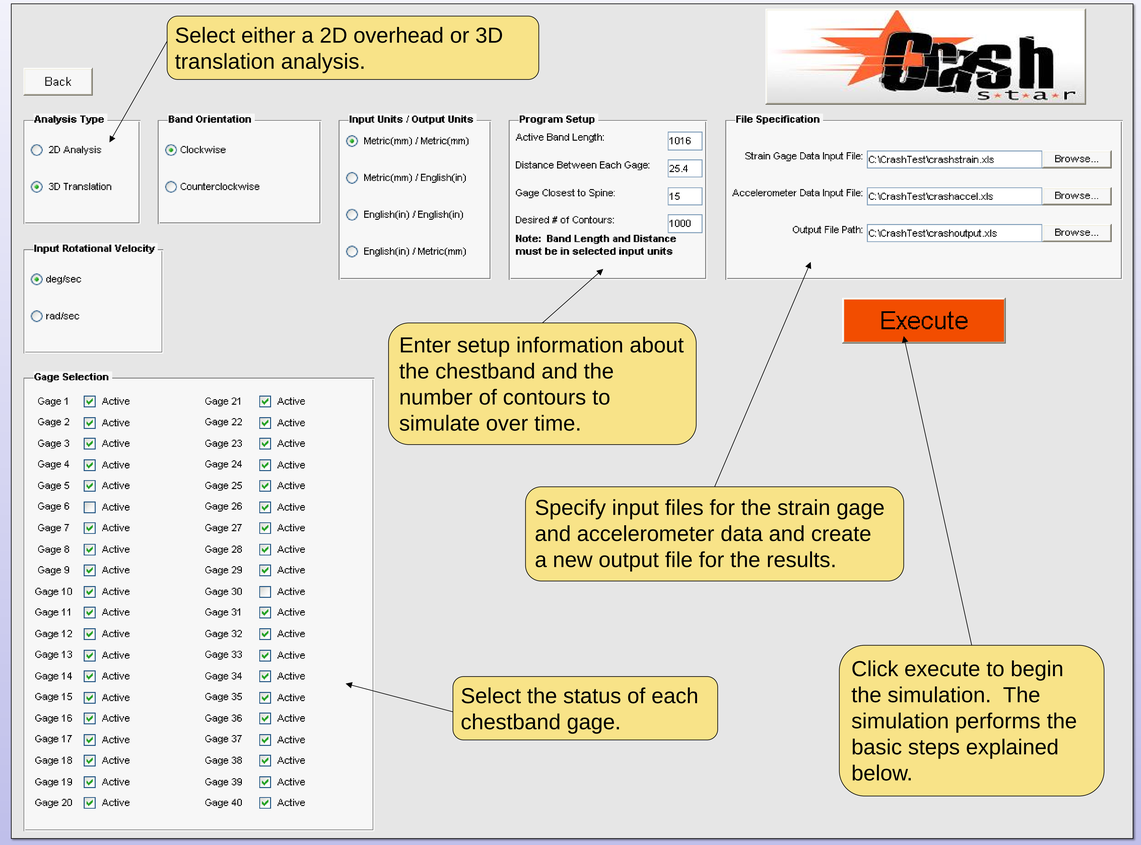
- Compatible with current data acquisition system
- Capable of translation and curvature analysis for side impact tests
- Generate 10,000 contours
- Data output is compatible with Microsoft Excel

Project sponsored by
NHTSA - VRTC
Josh Shaw, Research Engineer

Begin a new simulation



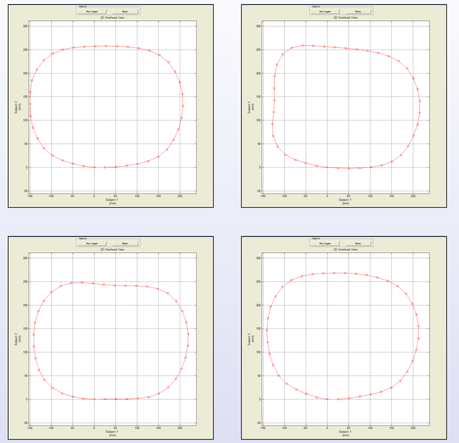




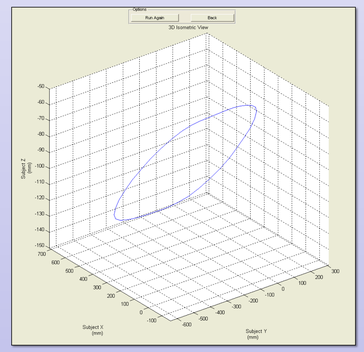
Processes performed upon execution:

1. Read in curvature and accelerometer data from a Microsoft Excel file.
2. Average and numerically integrate the raw experimental data.
3. Generate 2D contours from curvature data.
4. Apply translation and rotation data to 2D contours.
5. Create a new output file in Microsoft Excel.
6. Generate any of the three plot types shown to the right.

2D Overhead Plots



3D Isometric Plot



3D Orthographic Plots