Data visualization in matlab

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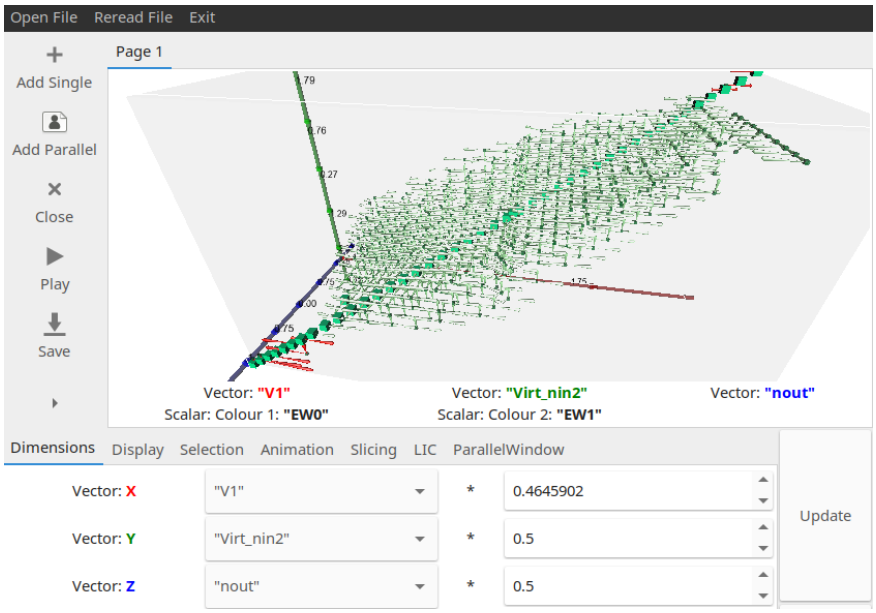
Background

Using a in-house state space discretization tool (vera), the state space of a circuit can be sampled in a precise and accurate manner. this discretization yields in a set of groups, a bidirectional graph and sampled points of the state space. using these information hybrid automata can be build as shown in [1] analyzing the data before the model generation can save a lot of time and is there fore a must.



Description

Using an existing algorithm state space information, such as (x,y,z) location, can be imported from vera to matlab. the result is a data set consisting of points, a bi-directed connection graph and a grouping of the sets. this information should now be plotted in matlab. the aim of this thesis is to implement a new matlab version of the visualization tool amcvis with significant improvements, but still preserving the existing options

Task

- Plot the data set. use therefore the tool spacem to read a file (acv) generated from vera and import the data to matlab. by default an auto scaling is applied, but this can be changed by the user.
- The settings of the plot generated should be saved and can be reused if the same file is opened again
- Upon a change to the .acv file, the plot is regenerated without leaving the program
- Extra buttons allow:
  - Scaling the color of the point according to a data set
  - Showing the vectors of the graph
  - Showing the dc points
  - Opening a new plot side by side to the existing one
  - Sectioning the plot
  - Plotting the phase diagram
- *Optional*: Implementing a socket connection allowing the direct plot of every new generated point at run time of vera

Literatur

[1] Ahmad Tarraf und Lars Hedrich. “Automatic Abstraction of Analog Circuits to Hybrid Automata”. In: *Analoge-2018*. Sep. 2018, S. 6.

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Advisor:
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Research project:
FaveAC

type:
MA/BA

Research area:
Formal Verification

Programming language:
Can be choosen by student

Required skills:
Good mathematical background, programming in MATLAB

Language:
English, German

Date of submission:

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