Reduction of network traffic to point images for the analysis of its behavioral structure

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1 Table of contents

2 Problem formulation

3 Problem solution

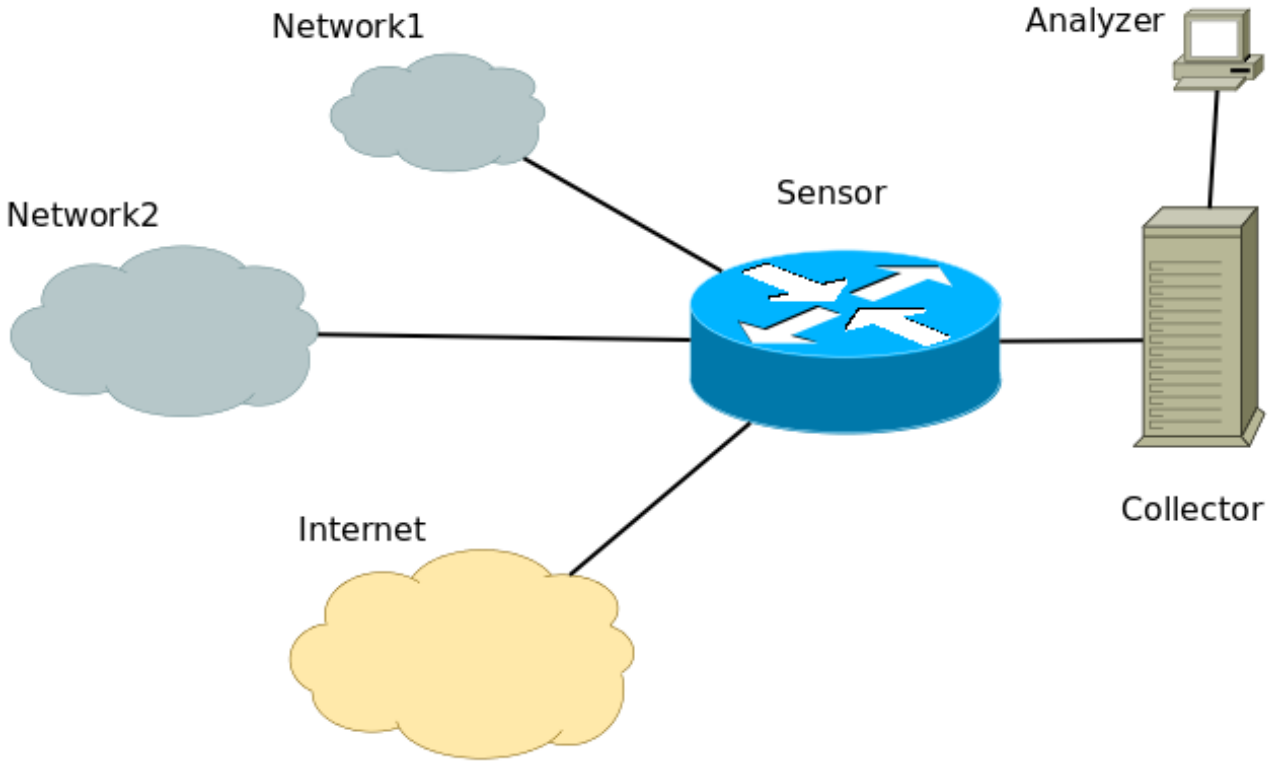
4 Example 1

5 Example 2

6 References

Problem formulation

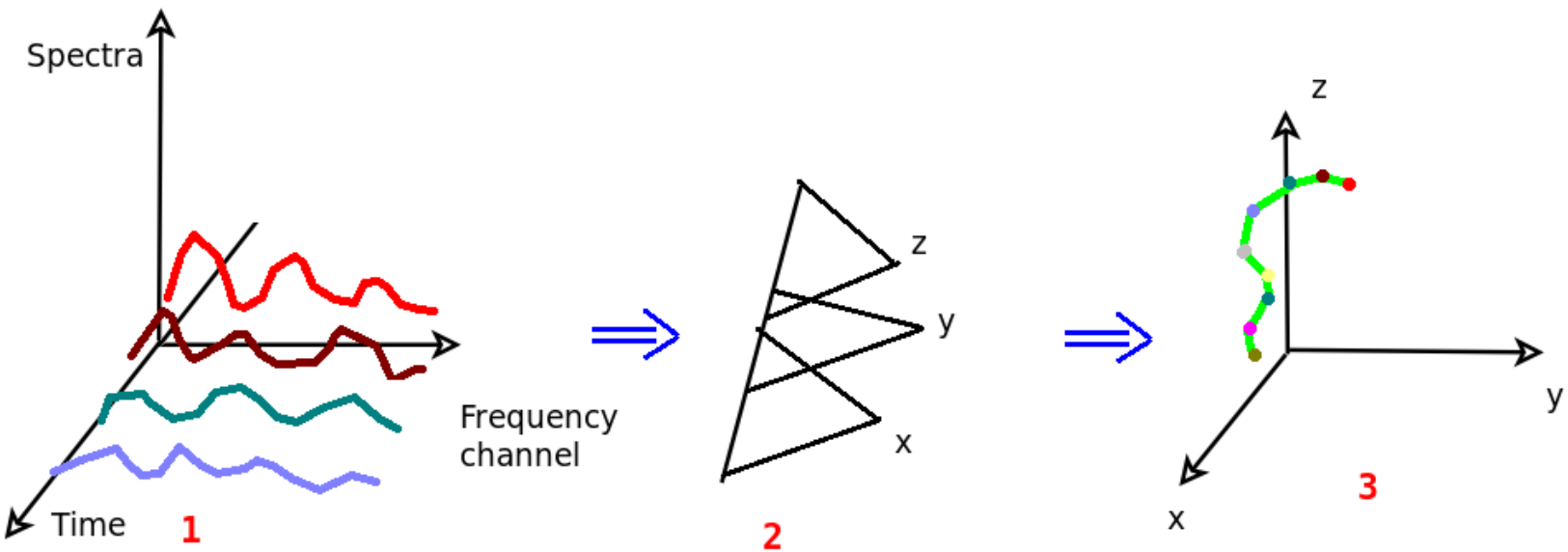
The software developed is an analyzer. The analyzer constructs a compressed spectral image.



NetFlow Architecture

Problem solution

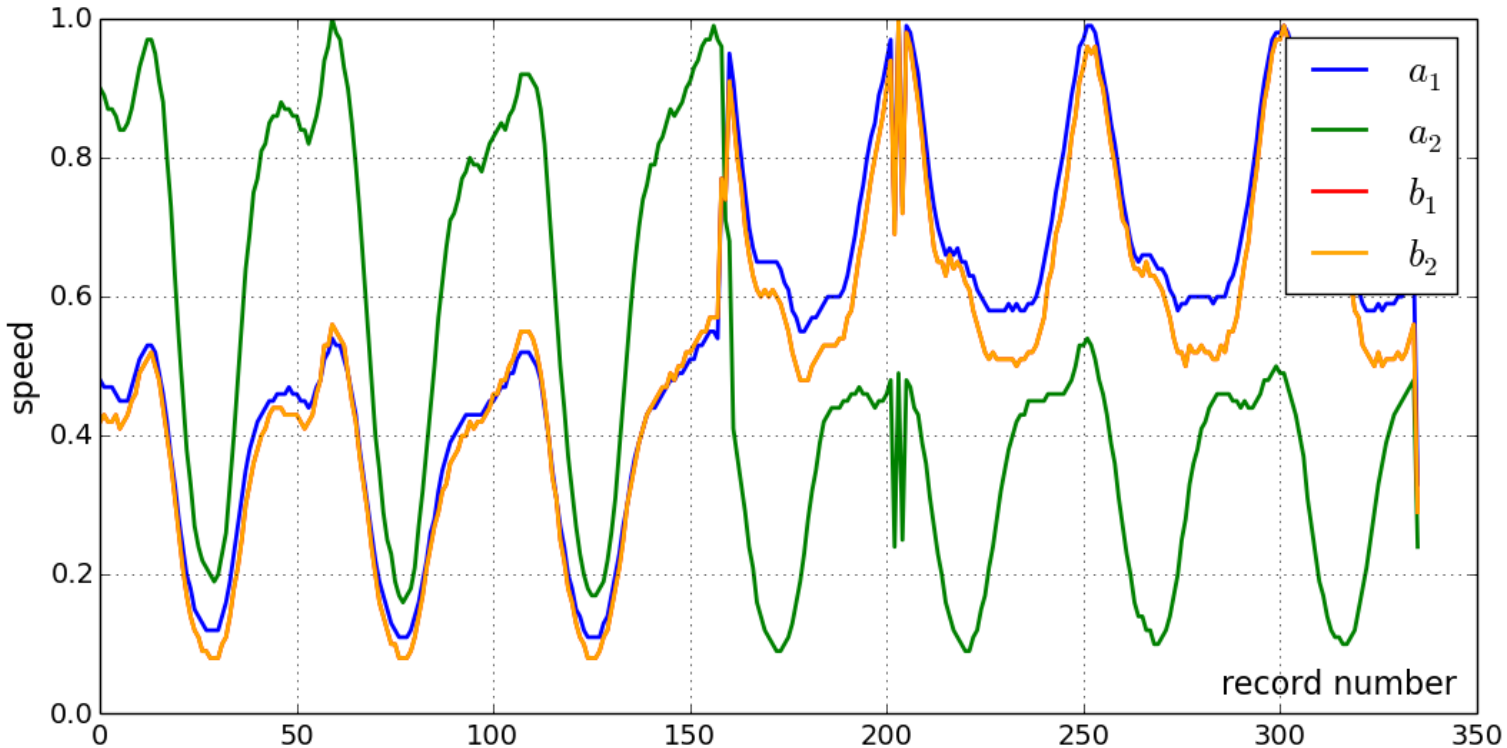
1. Dynamics multiple spectral images of the traffic's parameters fluctuations.
2. Neuralsimilar compression of spectral data.
3. Point images.



Analyzer scheme

Example 1

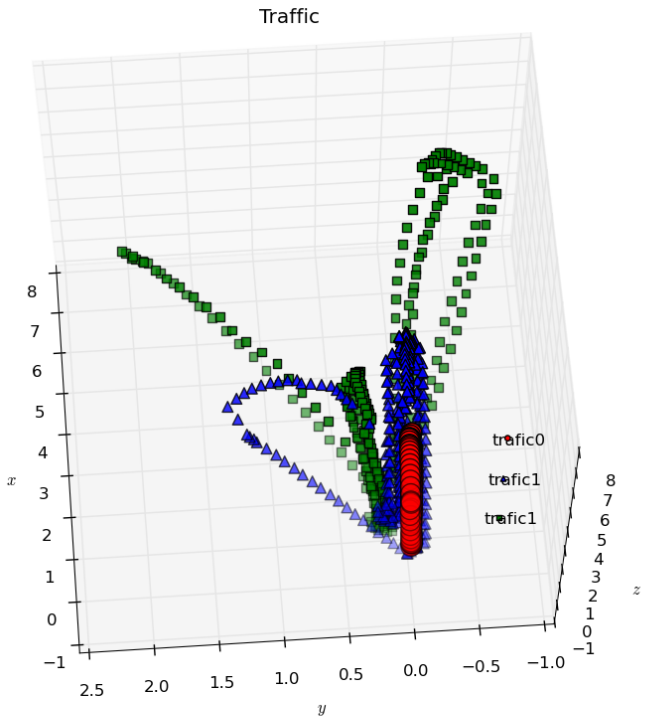
Traffic is normalized.



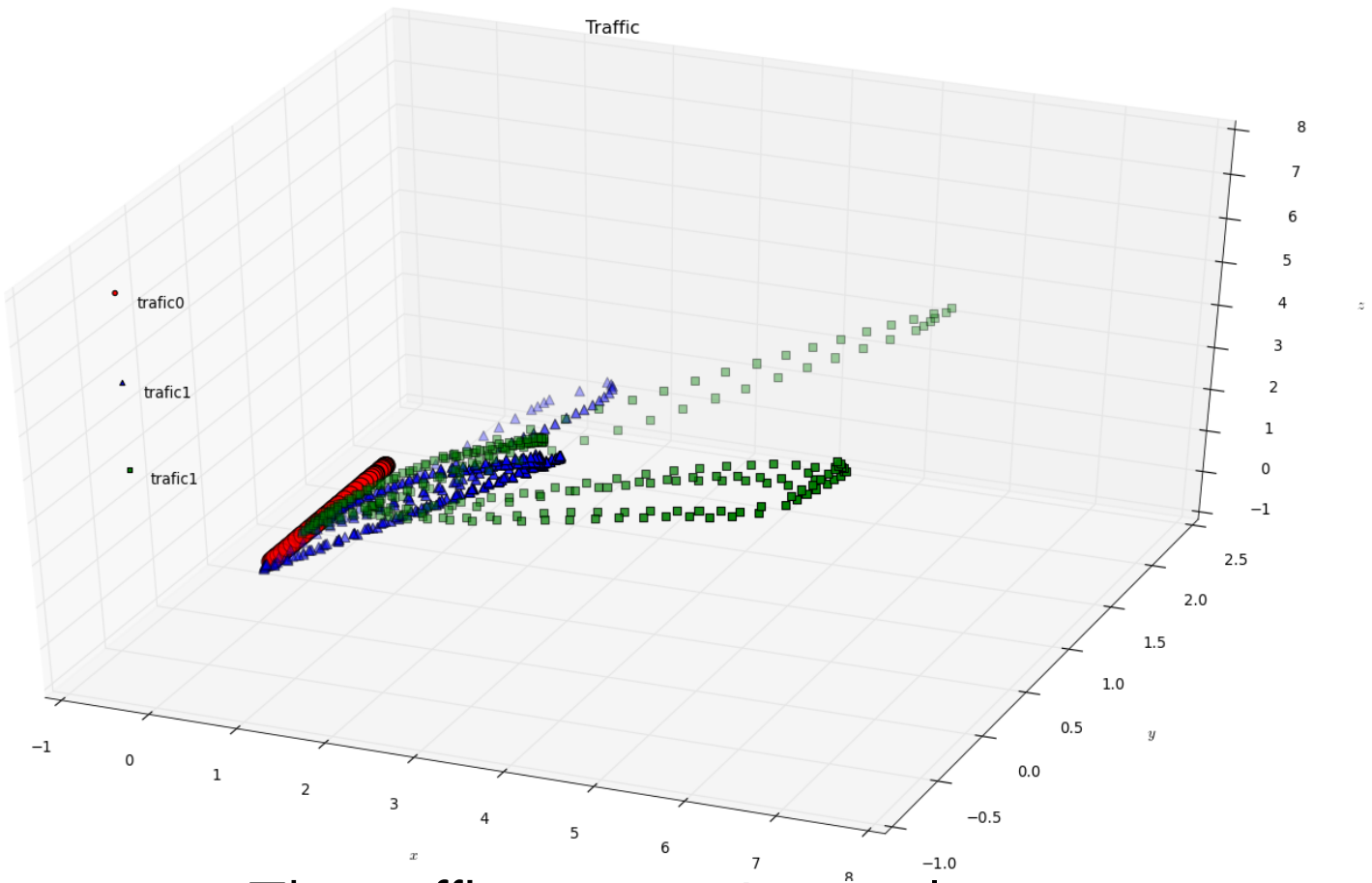
a_1 and a_2 incoming traffic,
b_1 and b_2 output traffic.

Example 1

- `traffic0` — normal traffic.
- `traffic1`, `traffic2` — overloaded traffic.



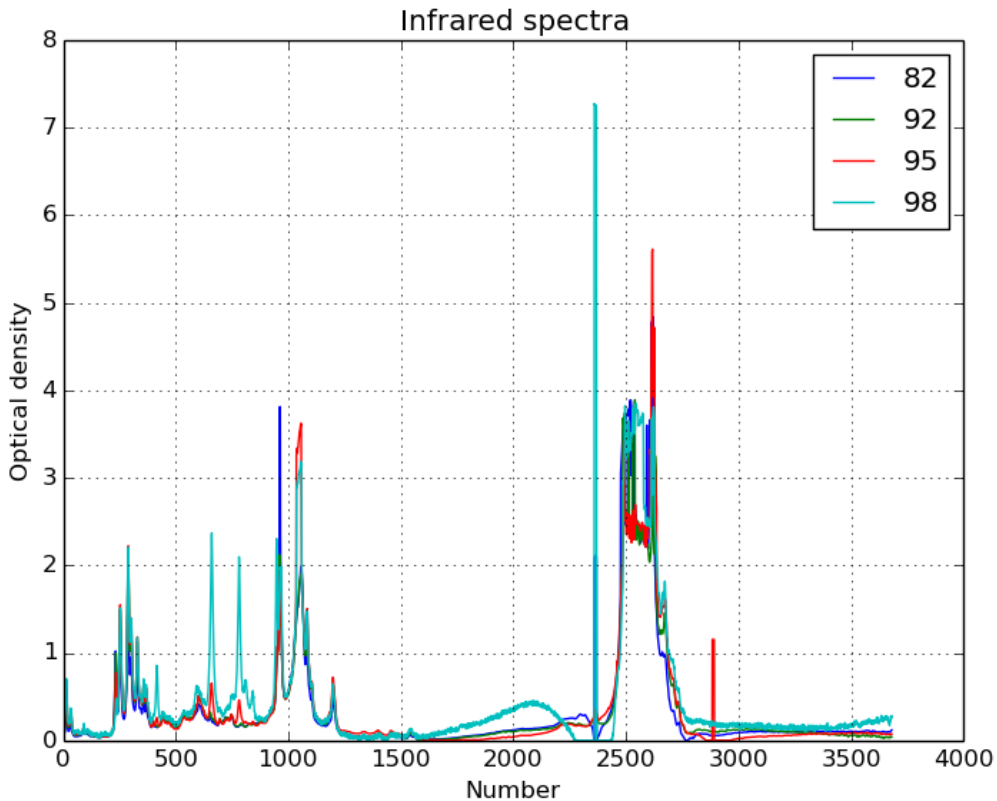
Example 1



The traffic compression result.

Example 2

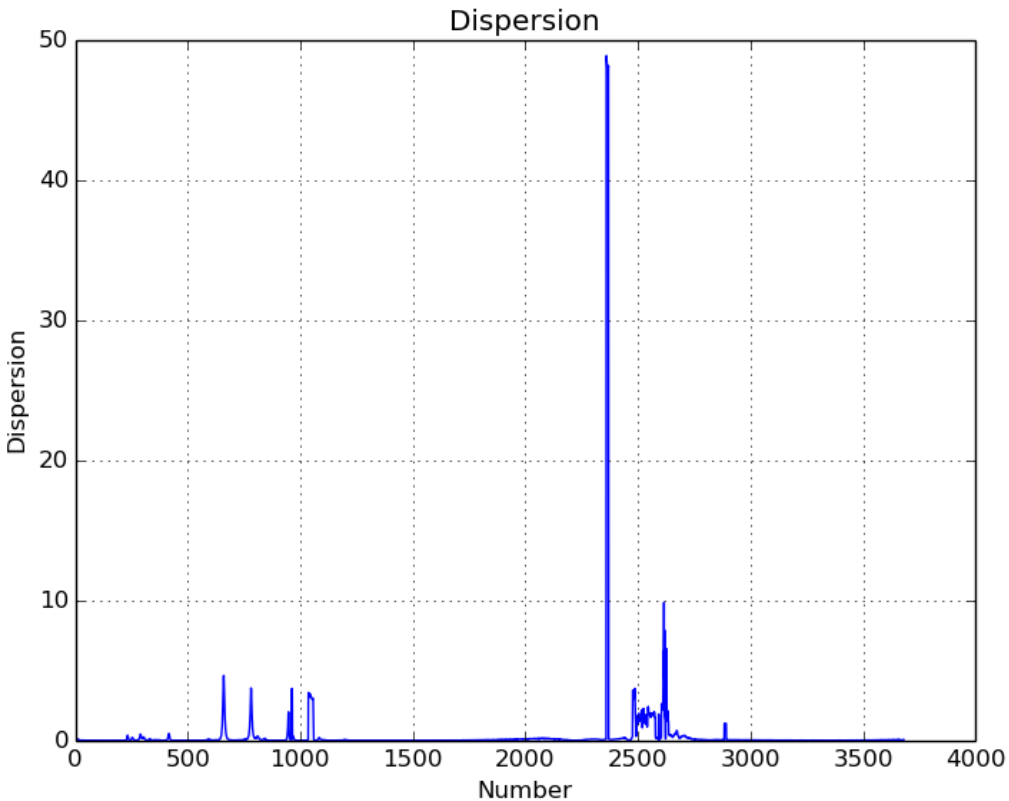
The problem of classifying gasolines according to their spectra.



Infrared spectra for gasoline.

Example 2

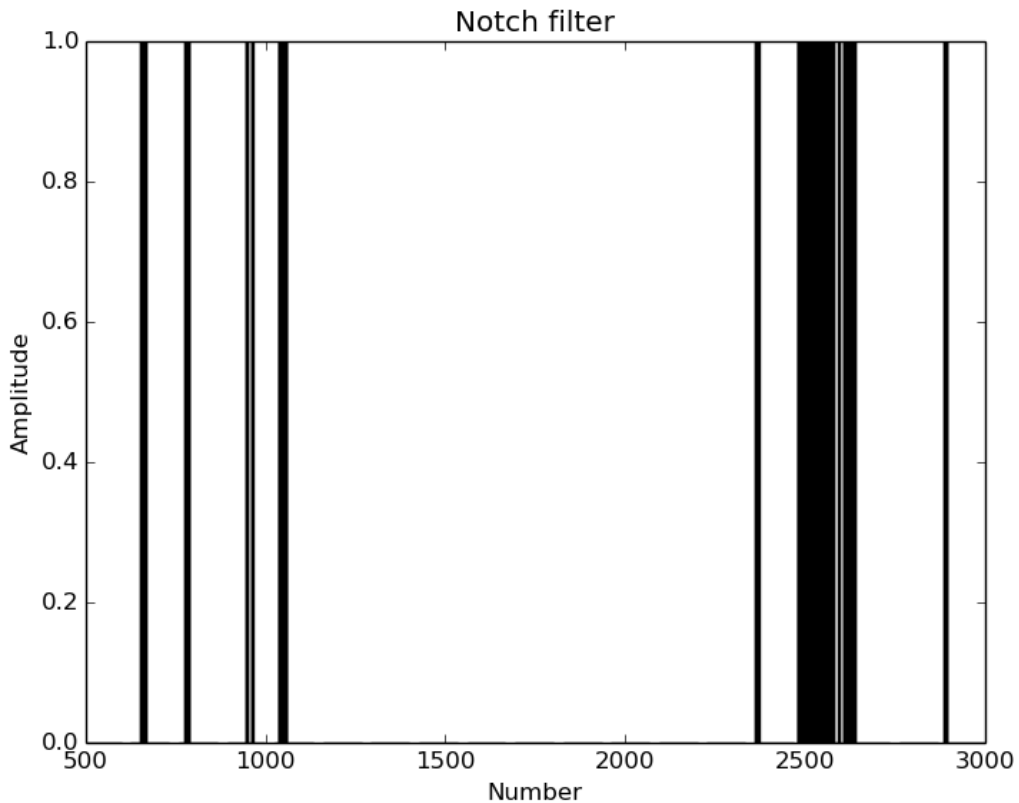
Calculate the dispersion.



Spectrum dispersion.

Example 2

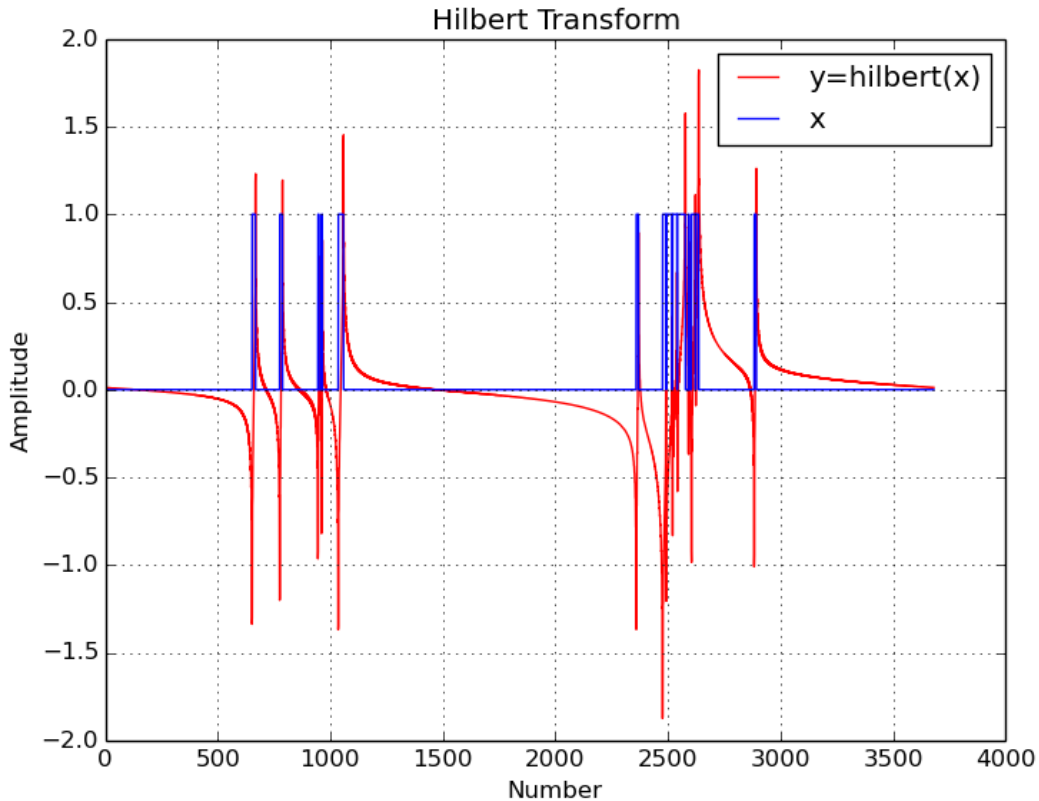
Filtered the data with a larger dispersion.



The first basis vector.

Example 2

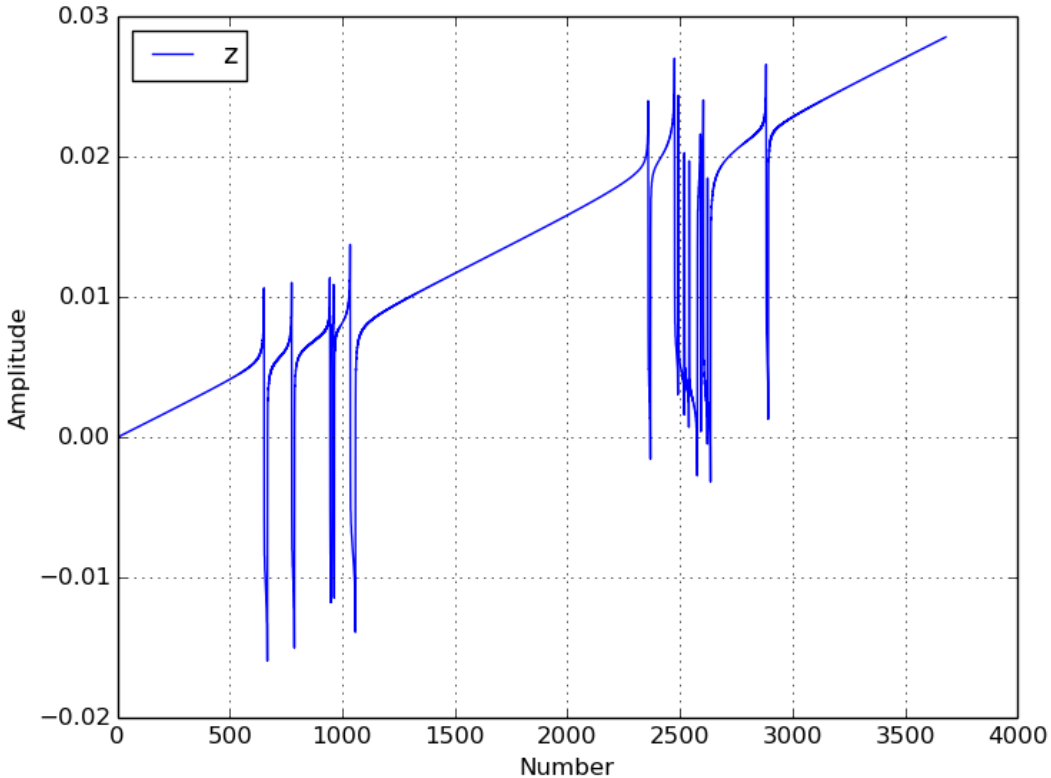
Performed the Hilbert transform.



The second basis vector.

Example 2

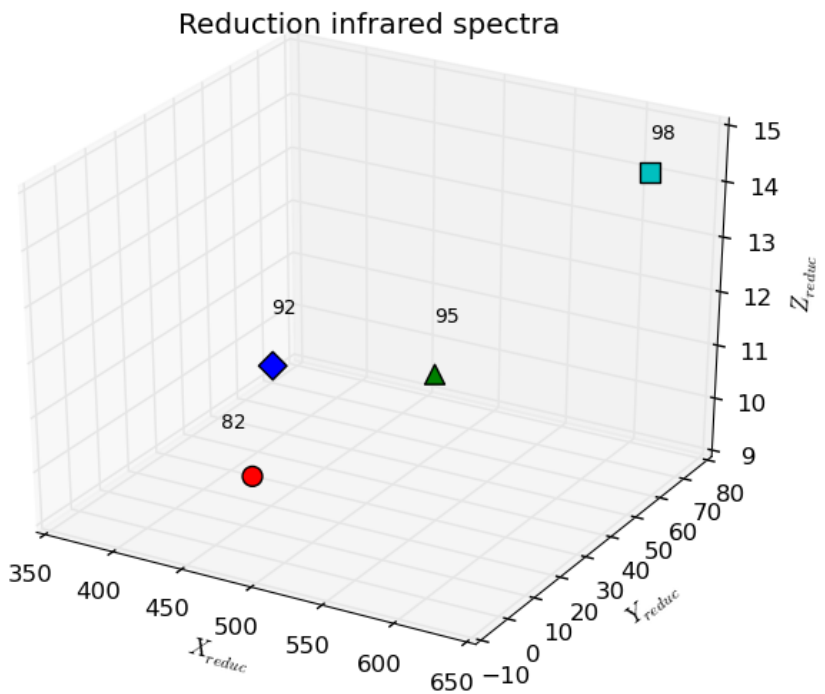
Performed the Gram Schmidt transformation.



The third basis vector.

Example 2

Projected into the basic space.



Reduced image.

Reference

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