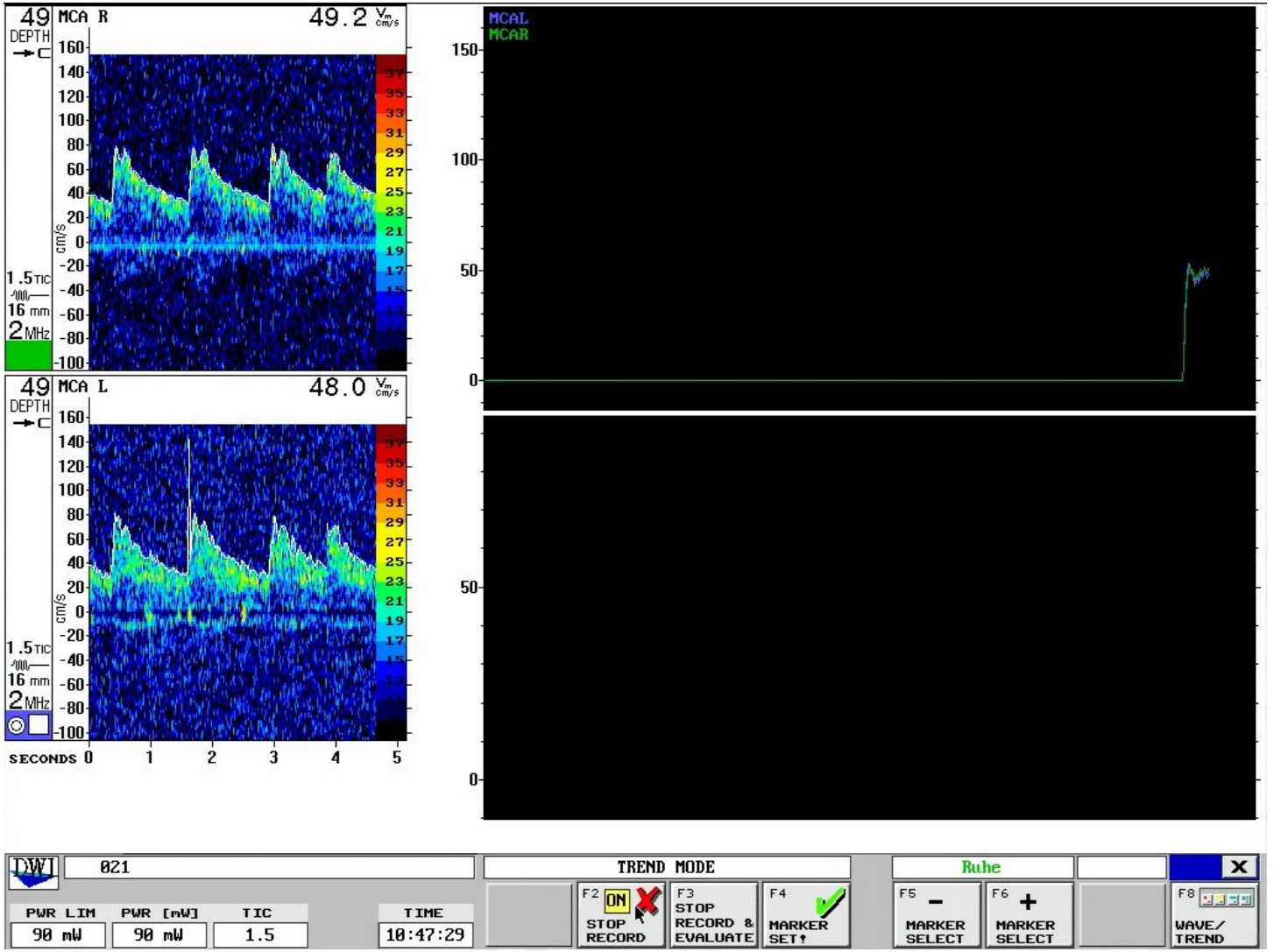
Herbert Breunung

medical image processing with Perl 5

med. img. processing with Perl 5

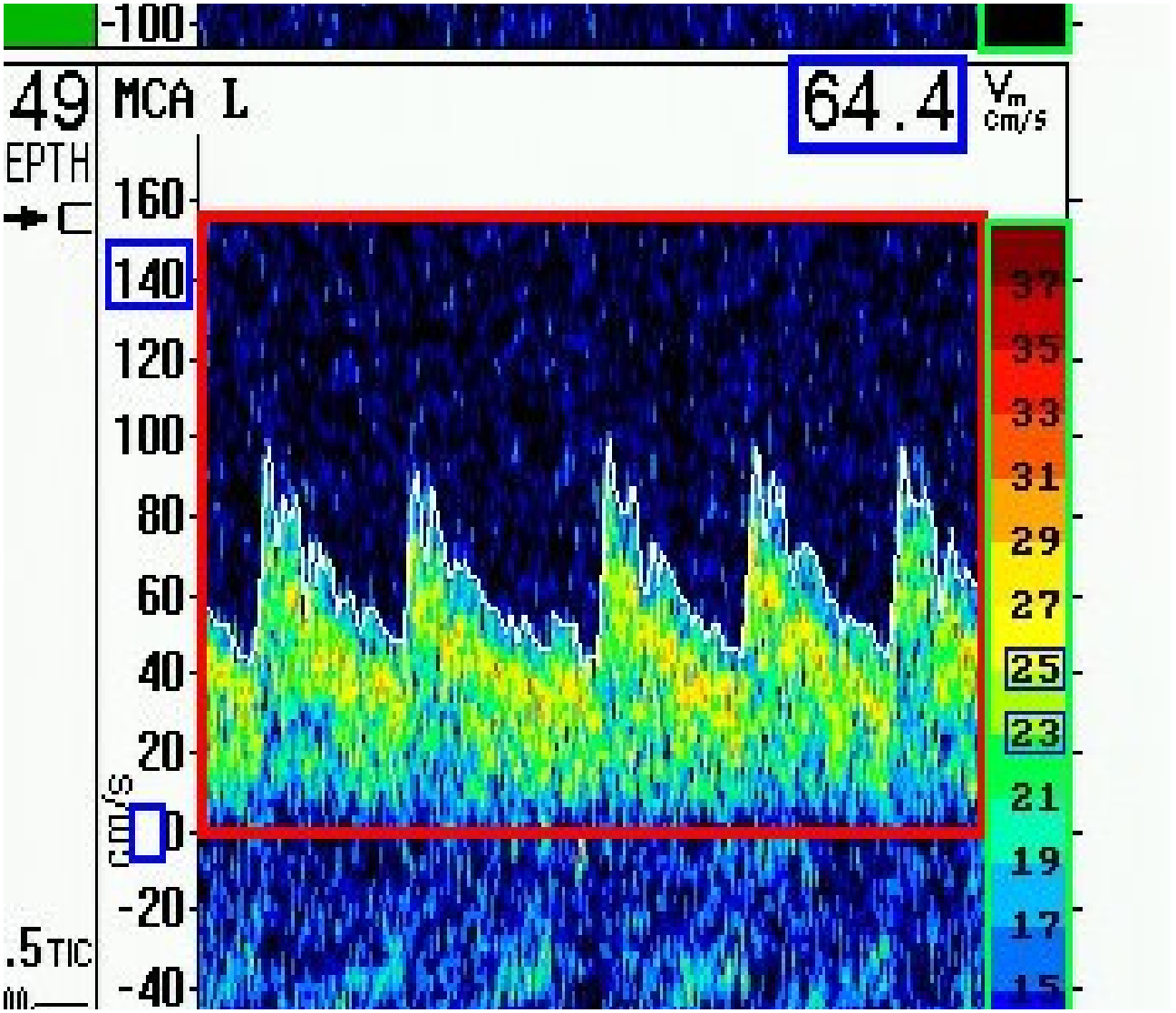


ultrasound probes

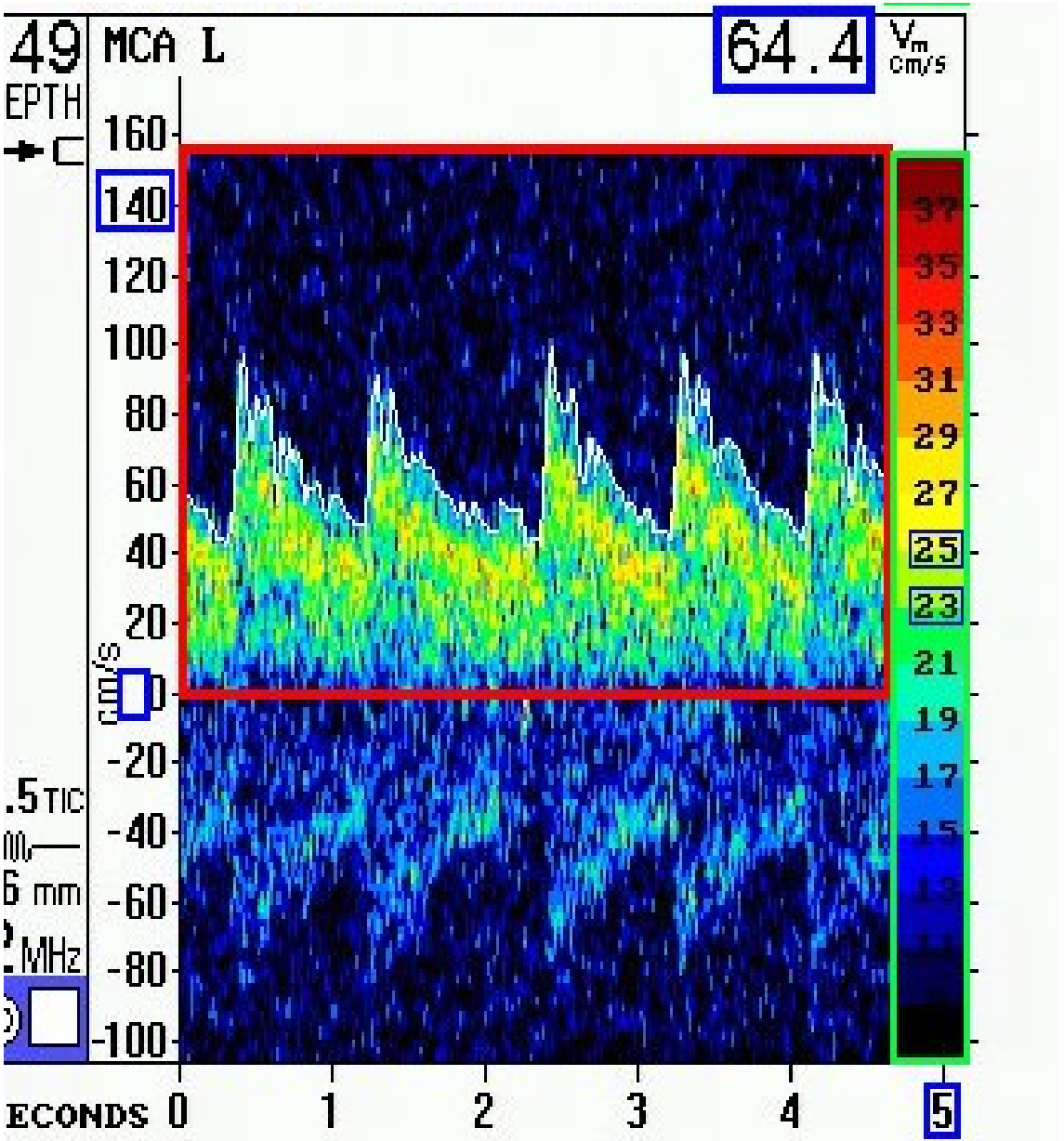
listening to MCA

middle cerebral artery

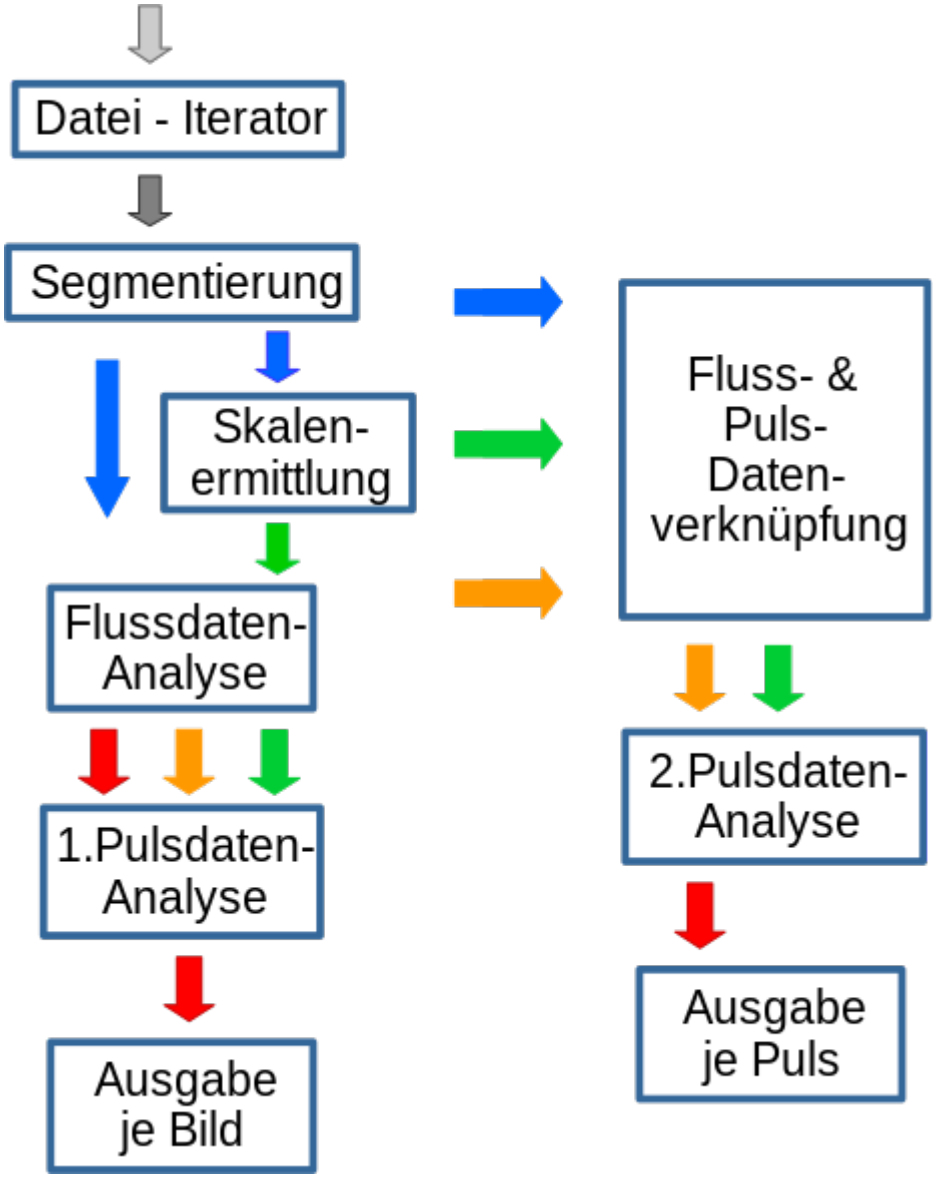
Y - blood velocity



regions of interest



data flow


Datei - Iterator
Segmentierung
Skalen-
ermittlung
Flussdaten-
Analyse
1.Pulsdaten-
Analyse
Ausgabe
je Bild
Fluss- &
Puls-
Daten-
verknüpfung
2.Pulsdaten-
Analyse
Ausgabe
je Puls

Used Modules :

Image::Magick, YAML,Text::CSV

Nicholas Clark,
Gummersbach 2018

How Geizhals took out ImageMagick before ImageMagick took ***us*** out.

Used Modules :

GD, YAML
Text::CSV

data

80+ studies ~ 4 GB

data

80+ studies ~ 4 GB

…and trouble starts

login screen

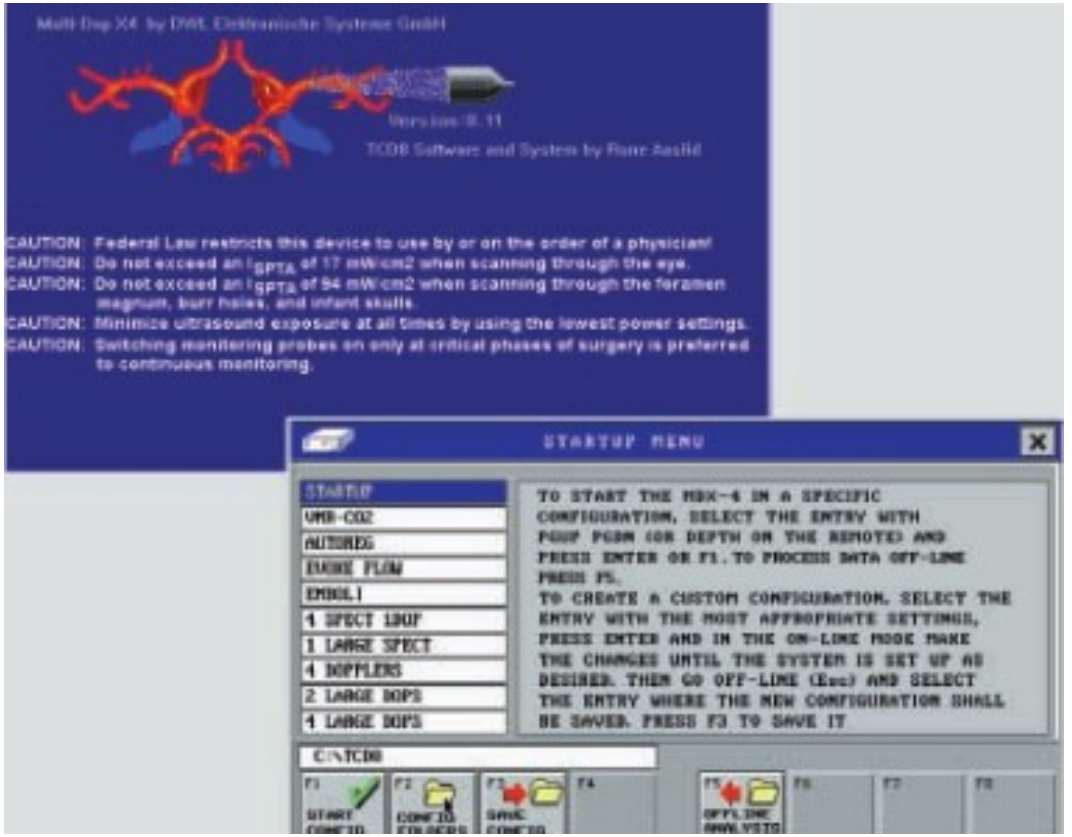
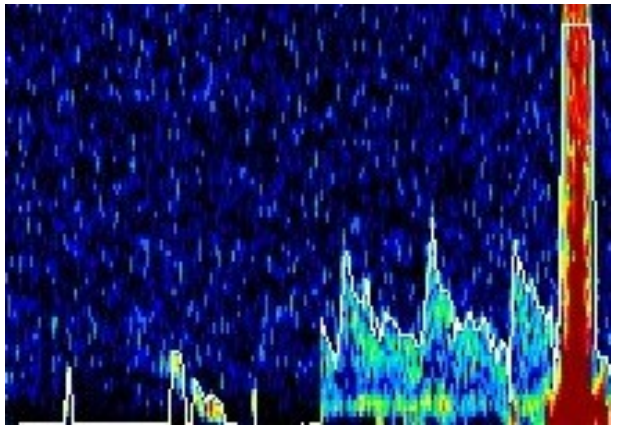
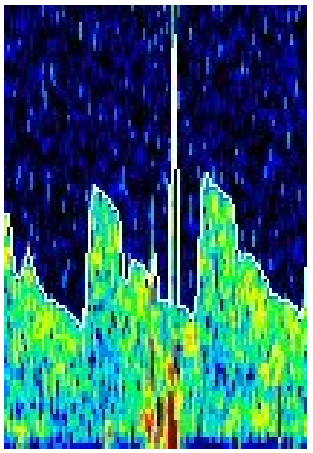


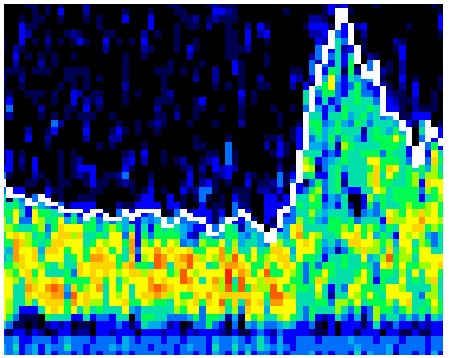
image issues

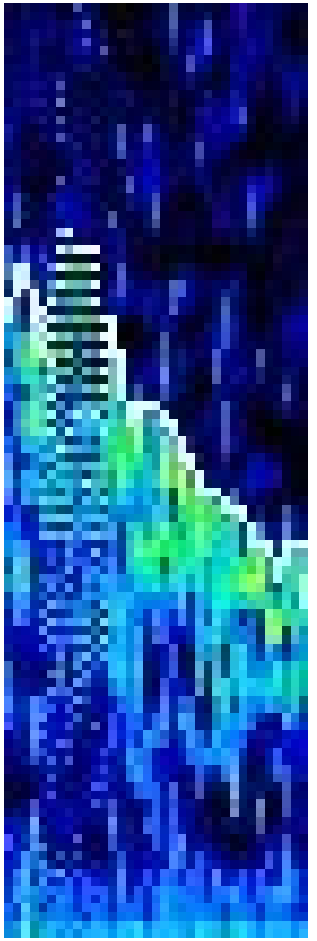
bad resolution,
bad-ish JPG compression,
image refresh artefacts,
pulse curve spikes,
artery vibration,
slack joint, maldjusted probe

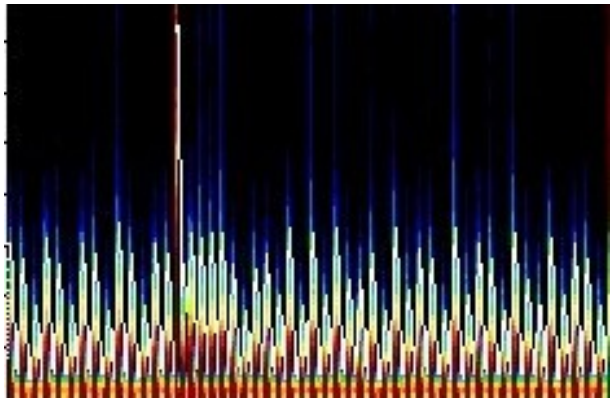
image issues

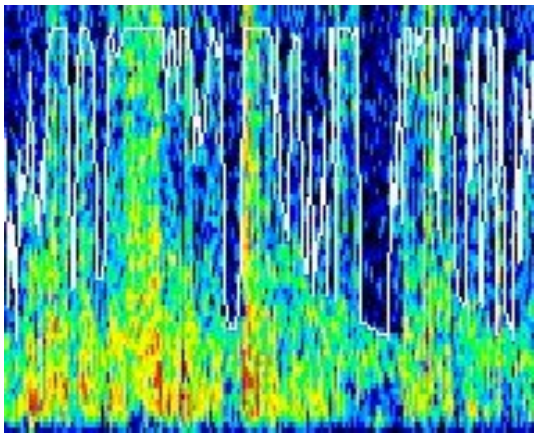


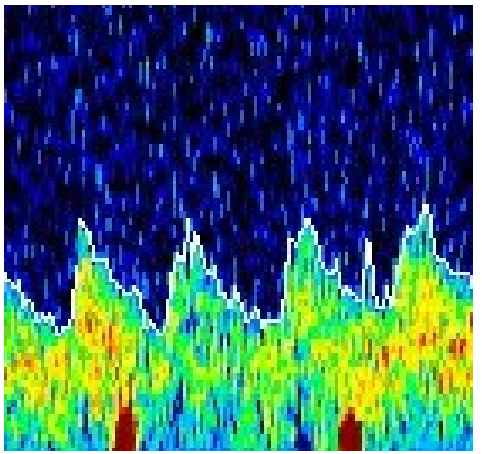




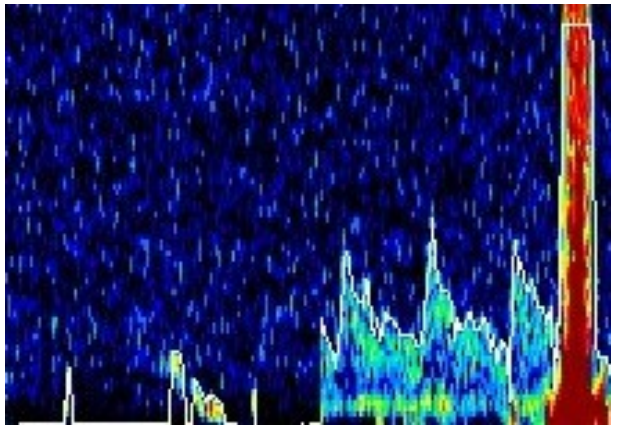


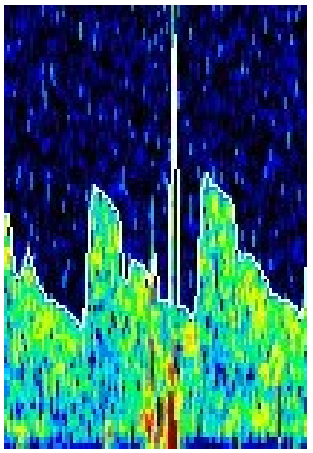


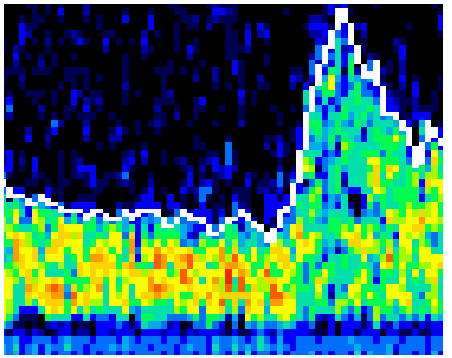


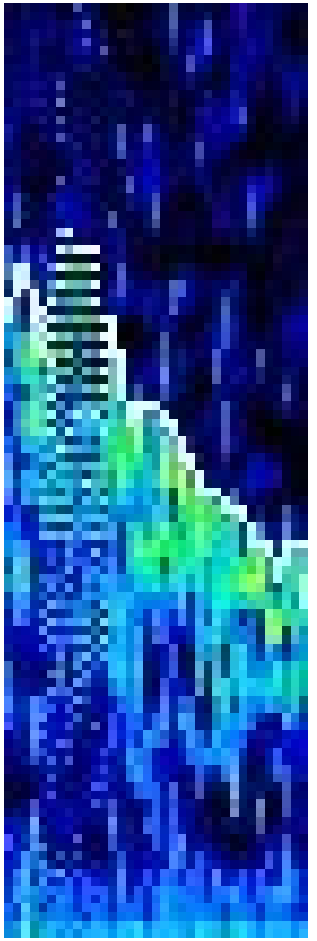


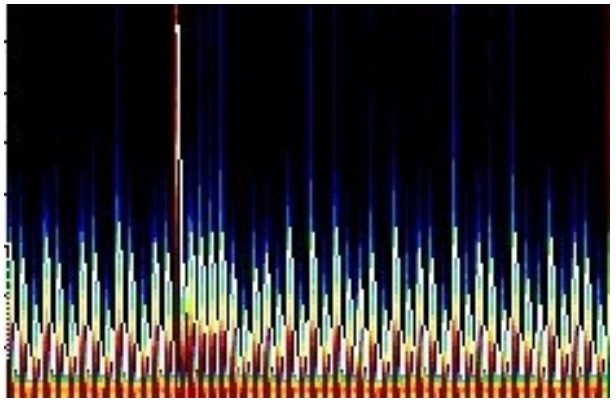
find heuristics

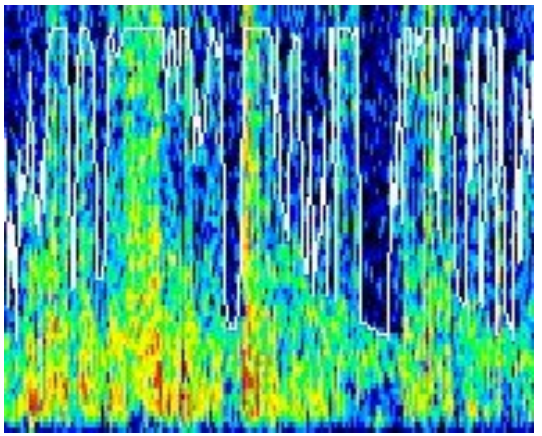


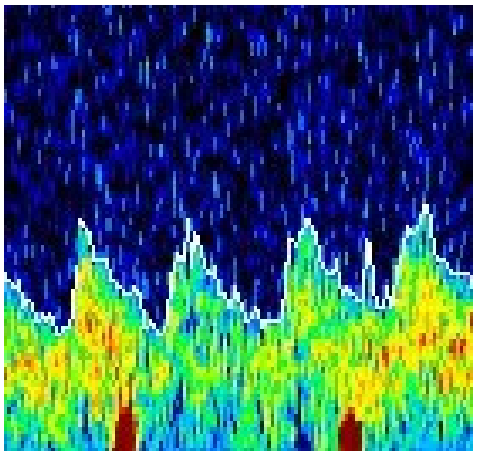












find heuristics

What did I learn?

Lesson 1

Quality > Speed

Lesson 1

Quality > Speed

Quality == Speed

image issues

retesting problematic subsets

(AI - boosting)

image issues

retesting problematic subsets

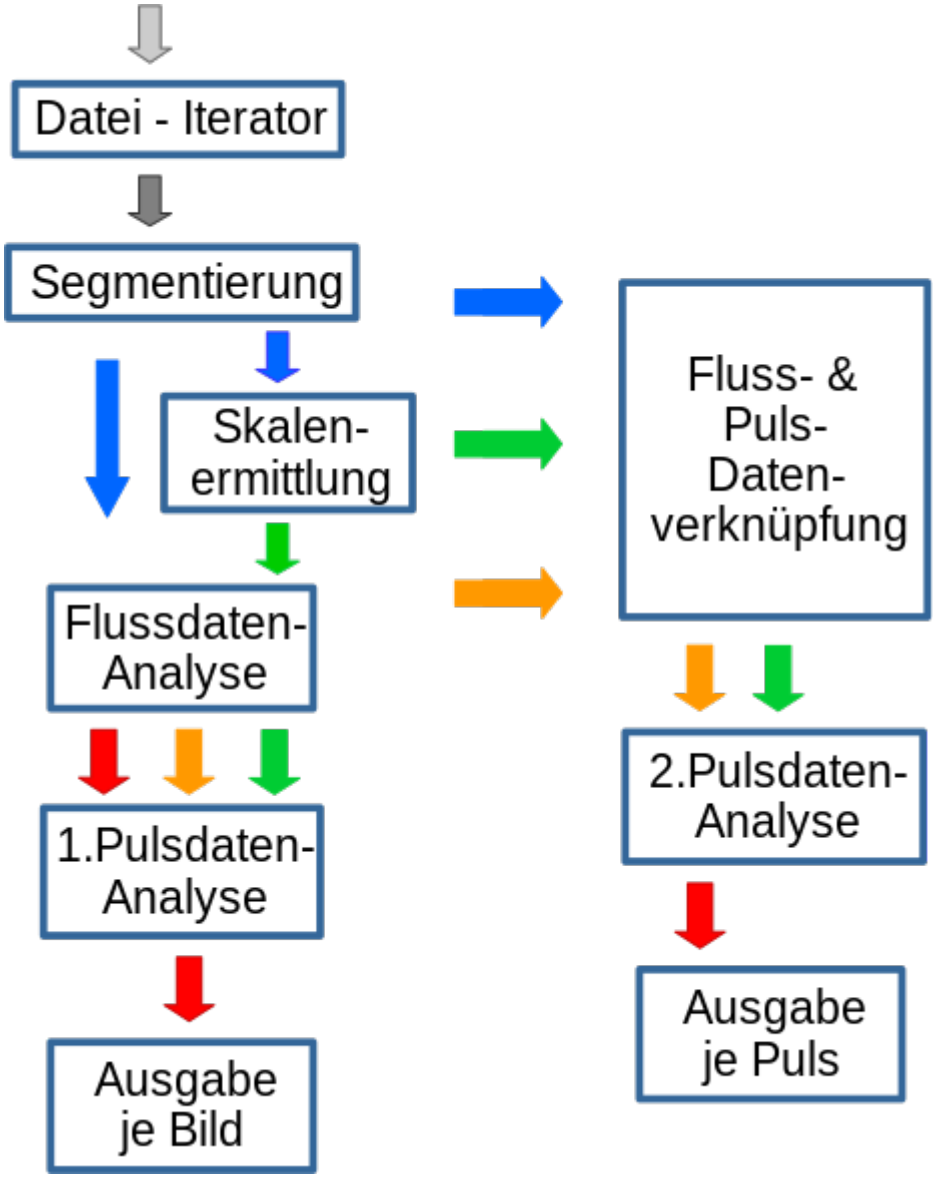
regression on 3.5GB (10h)

Lesson 2

solve issues

linearly ?

data flow


Datei - Iterator
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1.Pulsdaten-
Analyse
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je Bild
Fluss- &
Puls-
Daten-
verknüpfung
2.Pulsdaten-
Analyse
Ausgabe
je Puls

Lesson 2

use knowledge

Lesson 2

use knowledge

Speed !!

Lesson 3

No one has done that before?

Lesson 4

brain freeze:
artery
diletation

Lesson 4

brain freeze: slower but more blood

Lesson 4

reflex to protect heart and brain

Lesson 4

brain freeze reflex for stroke patients?

Lesson 4

Be responsible.

FIN

Thank You