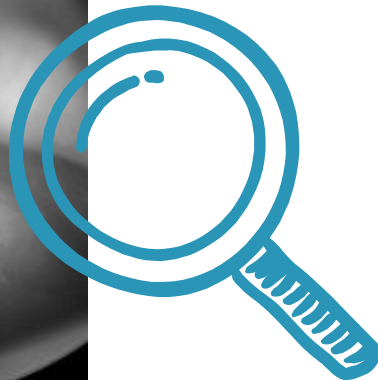
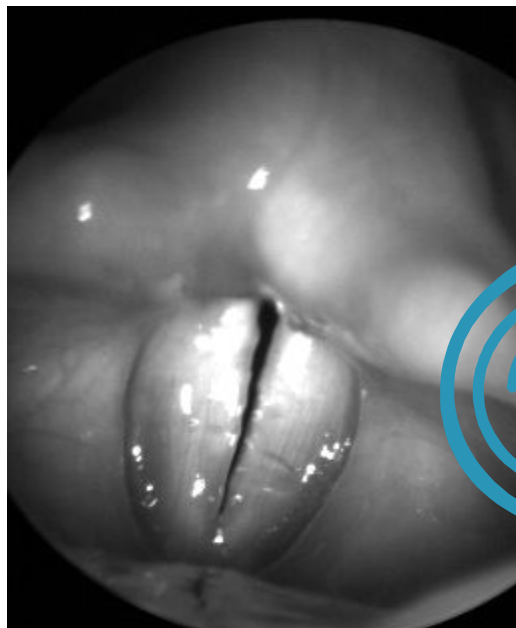


Data Science Survival Skills

Homework 3

Homework 3

In this week's lecture, we covered some kinds of data files and talked about datasets. You will have to work now with a mini version of the Benchmark for Automatic Glottis Segmentation ([BAGLS](#)) dataset. After that, the task is to convert an image from RGB to grayscale.



Homework 3: Tasks 1/4

We provide you a folder with a **MiniBAGLS** dataset (some images and their segmentation masks) in StudOn:

- Load four arbitrary images and their corresponding segmentation masks and metadata.

→ **Slide:** Screenshot of the code snippet



Homework 3: Tasks 2/4

- Plot the images with the segmentation masks overlaid in a picture. To show **all** four resulting figures, please use the **subplots()** method from matplotlib.pyplot. Each subplot should have the “Subject disorder status” as the title (contained in the .meta file).
- **Slide:** Screenshot of the plotted images



Homework 3: Tasks 3/4

- Load the “leaves.jpg” that we have provided for you as RGB image. Implement the following three variations to convert an image from RGB to Grayscale. Again, use the **subplots()** function to show all three variants side by side.

shape, channel

- Lightness Method

$$grayscale = \frac{\min(R, G, B) + \max(R, G, B)}{2}$$

- Average Method

$$grayscale = \frac{R + G + B}{3}$$

- Luminosity Method

$$grayscale = 0.2989 * R + 0.5870 * G + 0.1140 * B$$

→ **Slide:** Screenshot of the plotted images



Homework 3: Tasks 4/4

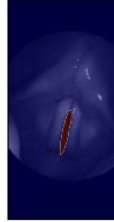
- Answer the following question: which method for RGB to grayscale conversion is the preferred one? State in 1-2 sentences why you think this.

→ **Slide:** Your answer

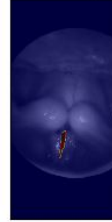


Homework 3: Example

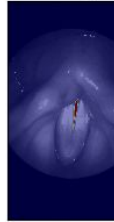
Vocal insufficiency and M. thyroarythaenoideus atrophy



healthy



healthy



healthy



Original



Lightness



Average



Luminosity



Homework: Requirements

You must complete **all** homework assignments (**unless otherwise specified**) following these guidelines:

- **One** slide/page.
- **PDF** file format only.
- It has to contain your **name, student (matriculation) number** and **IdM** in the down-left corner.
- Font: **Arial**, Font-size: > **10 Pt**.
- Answer **all** the questions and solve all the tasks requested.
- Be careful with **plagiarism**. Repeated solutions will not be accepted!