

Mini-project

Image Processing

Rolf Ingold, Anna Scius-Bertrand, Najoua Rahal

DIVA Group, University of Fribourg, Switzerland

Mini-project

- Goal: Implementing a solution for one of the 6 advanced image processing tasks:
 - Layout analysis
 - Bones detection
 - Counting bacteria
 - Landscape segmentation
 - Artistic effects
 - Binarization
- Datasets: <https://drive.switch.ch/index.php/s/nRJFTUOm1jdi11v>

Evaluation

- Mini-project should be done individually or by binomial.
- Validation at the end of the course by an oral presentation.
- Oral presentation 10 minutes.
- Need to be validated to access the exam.
 - If your the presentation is considered insufficient, we offer you a second chance on December 20th.
- One question on the exam will be personalized to your mini-project.

Timeline

- Today:
 - Quick examination of the projects list and provisional choice (or preferences).
- Tuesday November 22:
 - Schedule intermediate presentation.
- November 29 and December 6:
 - Presentation and discussion of current state of mini-project.
- December 13:
 - Oral presentation.
- December 20:
 - Catch-up and closing session.

Initial Todos

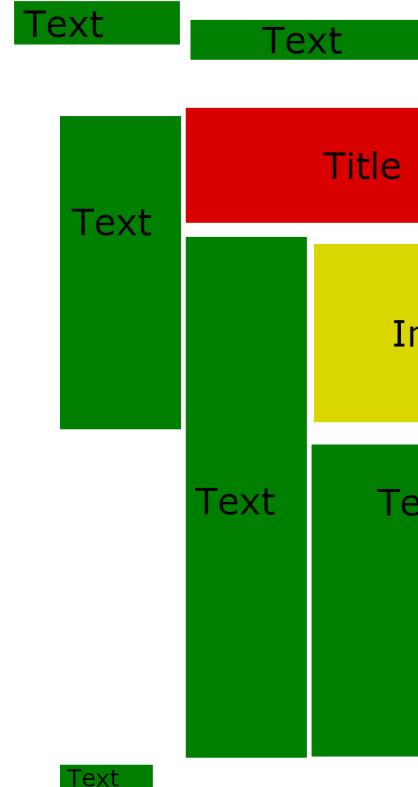
- Friday November 11:
 - Choose your project (optional with an alternative), and inform us if you it alone or in binome (text file on ILLIAS).
- Friday November 18 (if need on demande 20th) :
 - A description of your understanding of the problem with preliminary ideas how to solve it (text file on ILLIAS with github link of your project repository).

Layout analysis

- Goal: extract each text block and image on a page document.
- Dataset: 10 page images



Input images



Output

Bones detection

- Goal: segment all bones from the hand radiography images
- Dataset: 10 hand radiography images

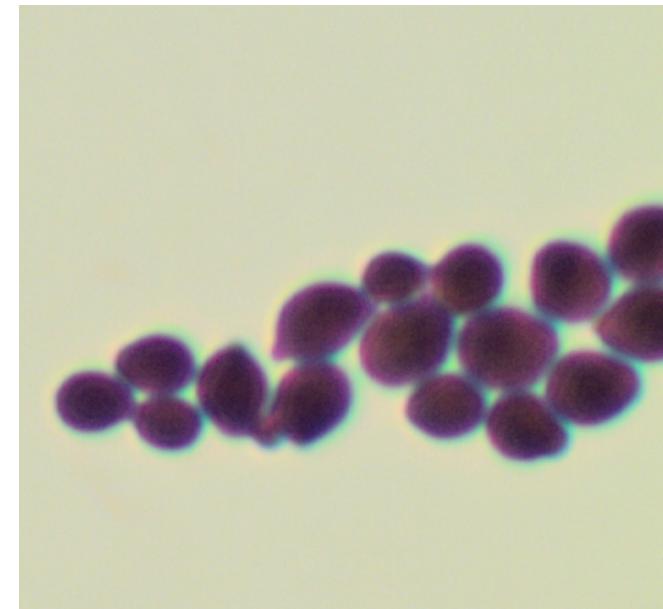
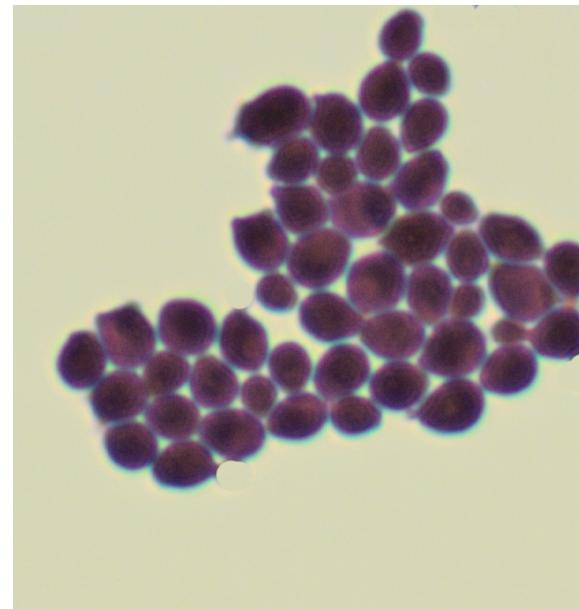
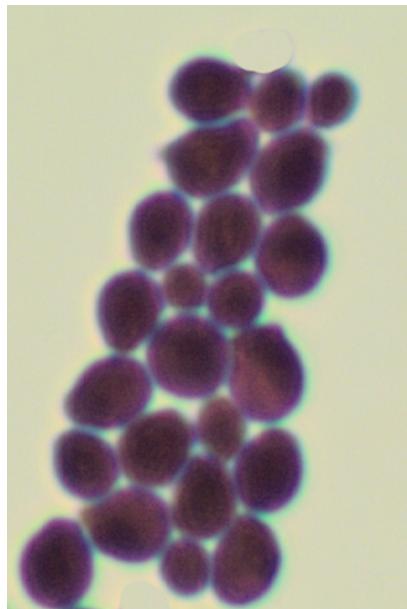


Input images

Output

Counting bacteria

- Goal: count how many bacteria are on an images
- Dataset: 10 images of multiple bacteria



Input images

- Output: image $x \rightarrow n$ bacteria

Landscape segmentation

- Goal: Find a separating line between the mountain crest line and the background.
- Dataset: 10 images of landscape



Input



Output

Artistic effect

- Goal: implement 3 artistic effects from those below. You can add another of your choice.
- Dataset: you could use the images from ILIAS or your own images.



Effect 1: oil painting



Effect 2: age an image



Effect 3: mosaïque



Effect 4: ripple



Binarisation

- Goal: Test and compare different binarization method to find the optimal one regarding the data.
- Dataset: 10 various images.

Questions?