NANO

PROGRESS 31/08 – 25/09

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RESEARCH QUESTION

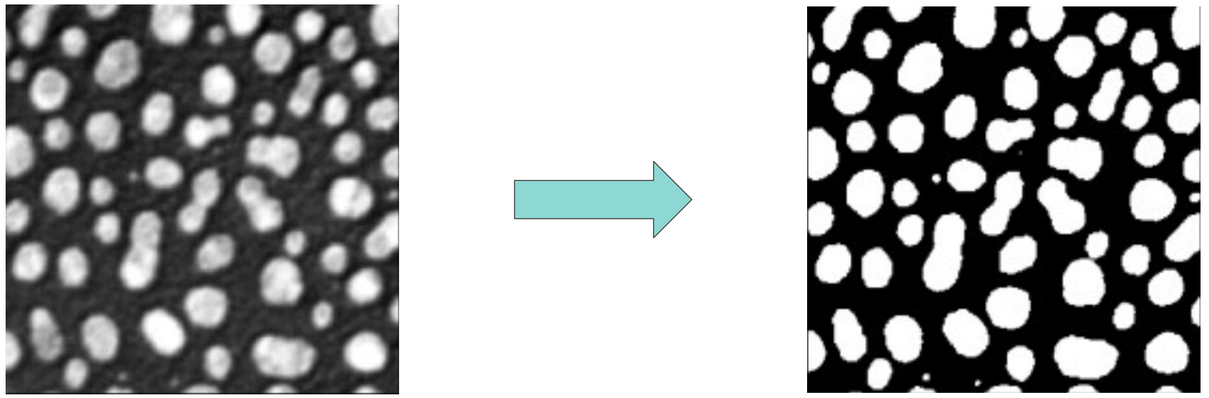
How can a Machine Learning model that predicts the optimal thresholding algorithm assist VSParticle to analyse nanoparticle images?

Sub-questions:

1. How does the collected data of VSParticle's image analysis program need to be restructured to have a Machine Learning model make predictions?
2. What type of data is required to have a Machine Learning model make predictions on which thresholding algorithm brings out the most valuable information in the nanoparticle images owned by VSParticle?
3. What does the architecture of a Machine Learning model need to look like to make predictions on the thresholding algorithms used by VSParticle?
4. How can the predictions of a Machine Learning model graded by VSParticle's users be used to improve the model over time?

vsparticle

- Work with nanoparticles (image processing)
- Turning grayscale images into bitmaps (only black and white pixels) using thresholding algorithms



- A user gives a score of how well the image turned out
- Use Machine Learning to predict the best thresholding algorithm for each picture
- Non-disclosure agreement

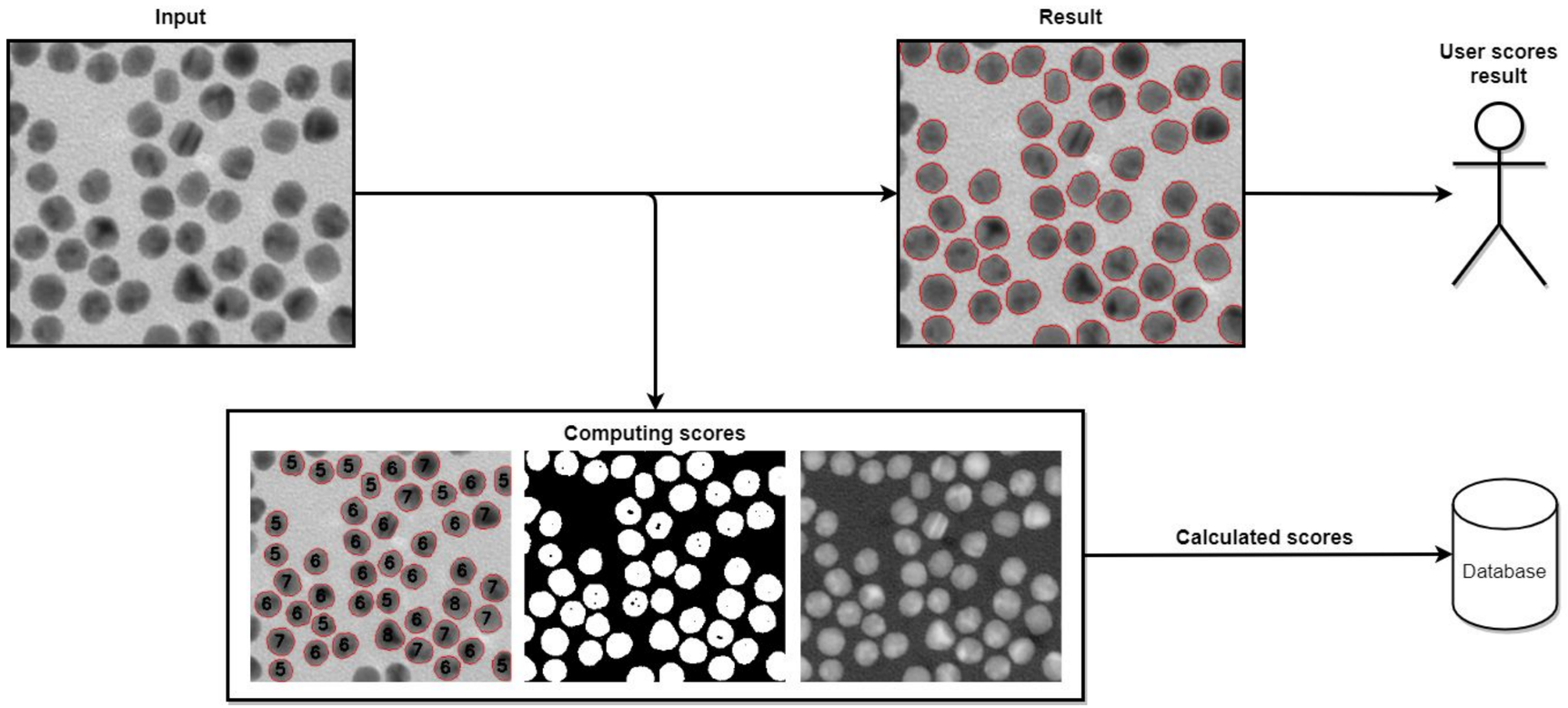
THE DATA ATTRIBUTES

Parameters

Metadata

Results

Scores

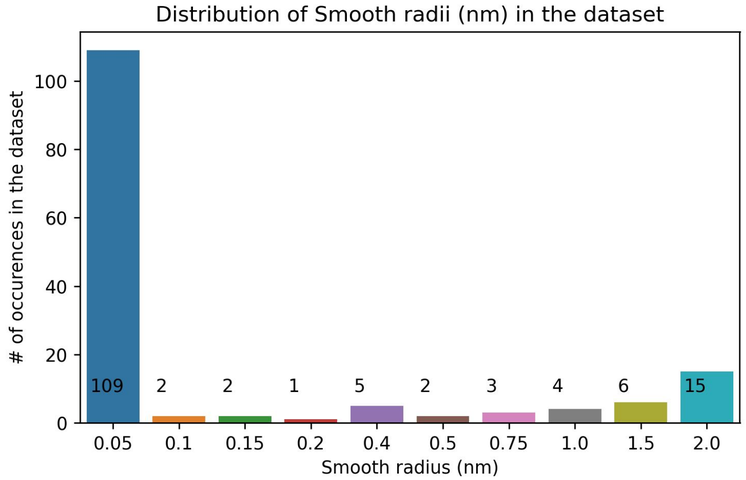


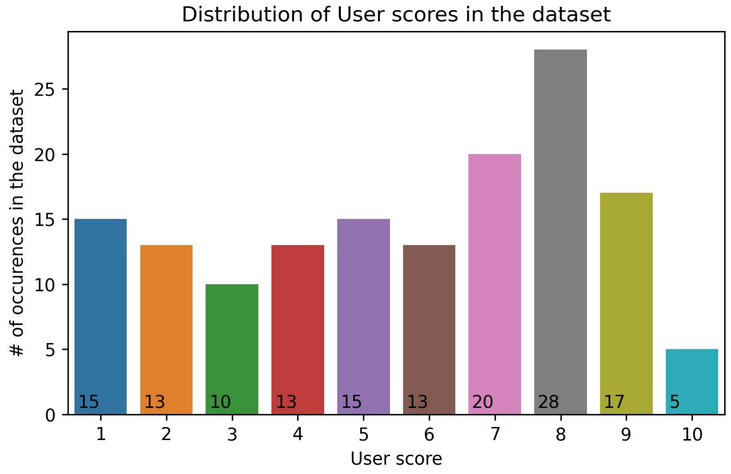
WHAT WE HAVE DONE

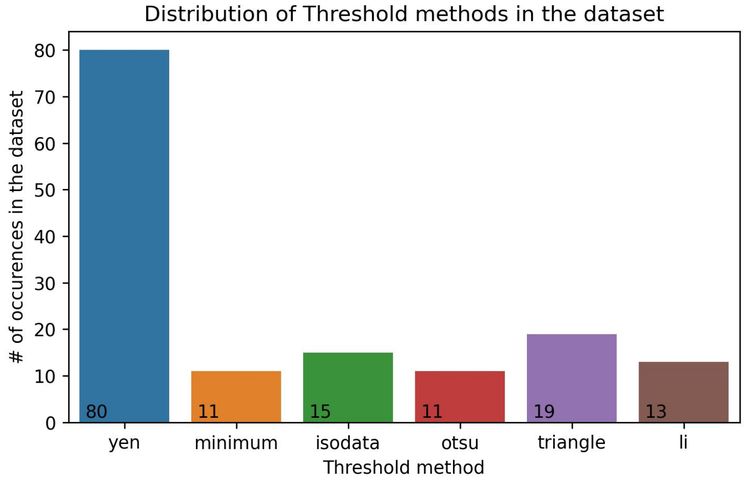
- Demo and data explanation from project owner
- Clean data
  - Remove faulty runs
  - Insert data from parent runs into child runs
- Visualize data
- Find main research question
- Setup research plan

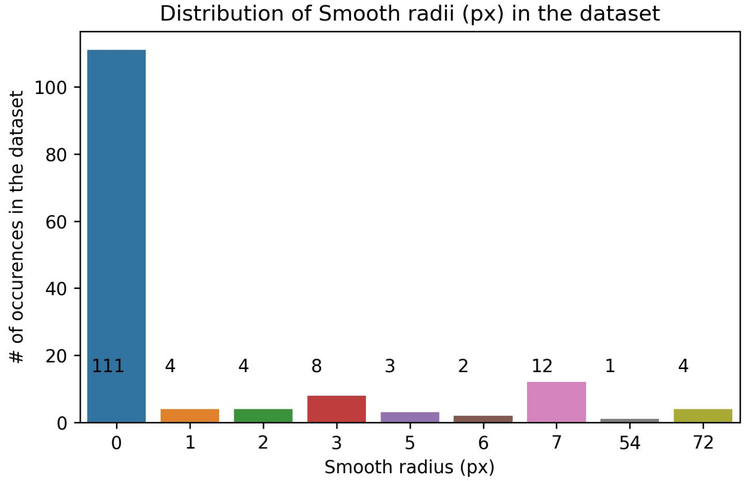
VISUALIZATIONS

- Imbalanced data
  - Work with binary data









NEXT STEPS

- Find solution for imbalanced data
- Research similar projects
- Replace missing data with averages
- Finish DataCamp

Questions?

Thank you for your attention!