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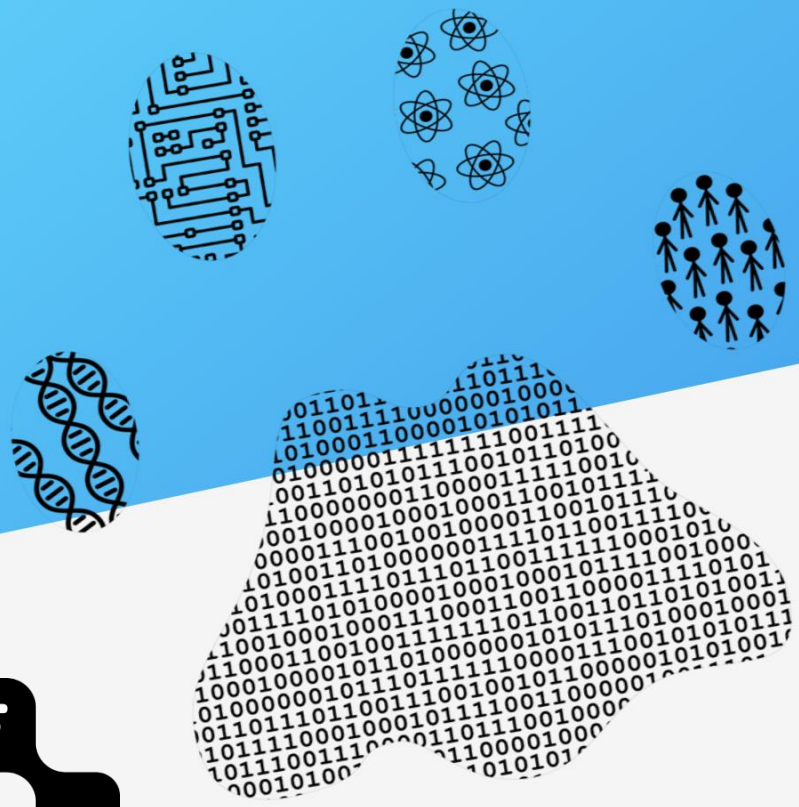
About Us Benchmarks LogIn

EYRA Benchmark Platform

A platform for benchmarking scientific algorithms



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The mission: Make the company's recommendation engine 10% more accurate

Was won when the best teams started collaborating

https://www.thrillist.com/entertainment/nation/the-netflix-prize

“Even if the contest didn't play out like many might have first imagined it -- one brilliant genius scoring a million dollar jackpot -- it instead helped make large strides in the fields of artificial intelligence, machine learning, and recommender systems.”

"There's definitely a sense of community and a sense of camaraderie," says Volinsky. "It was a great experience for everyone who participated in it and it was such a unique project and such a unique problem to solve that I think we'll all remember it as a high point of our careers.“

RoboCup (https://www.robocup.org/)

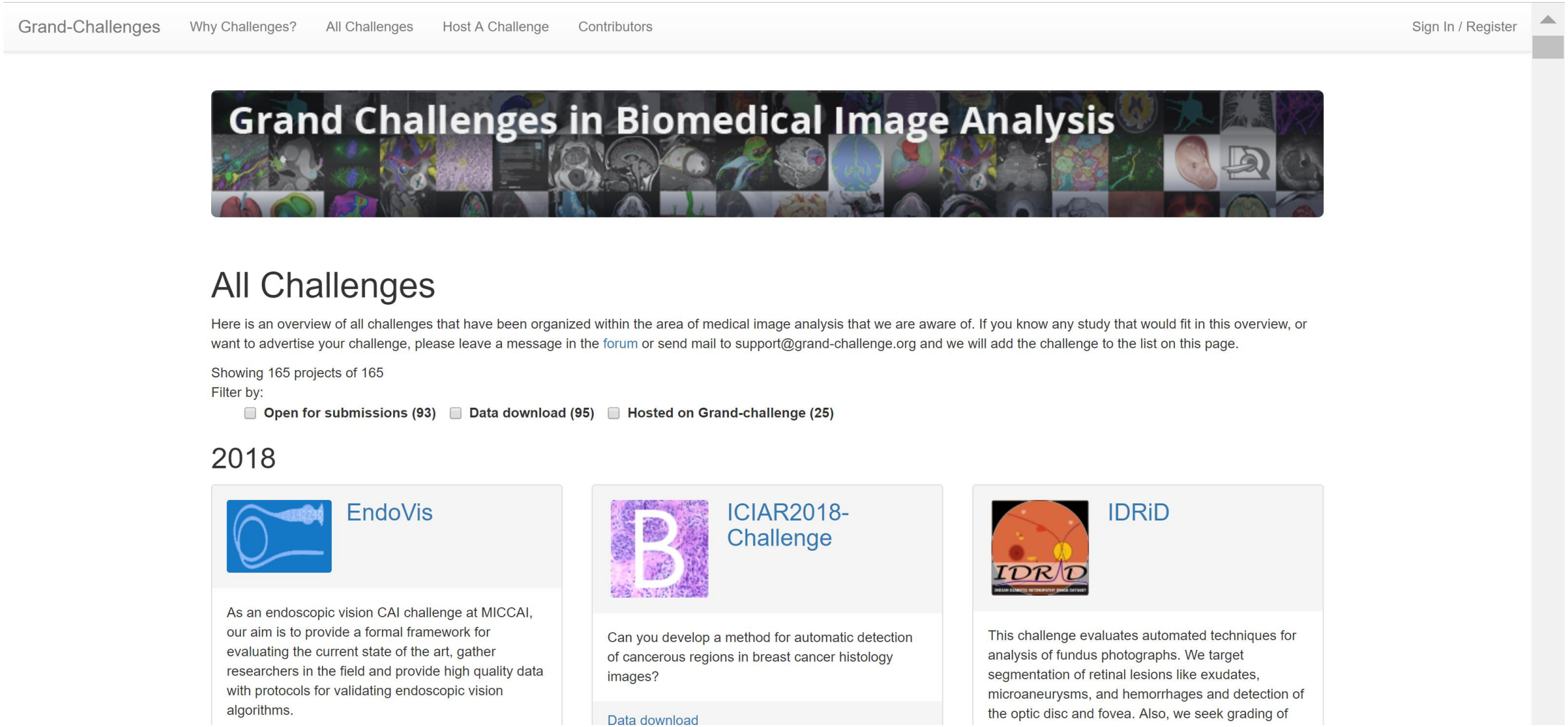
The mission: to field a team of robots capable of winning against the human soccer World Cup champions by 2050.

Each year robots improve dramatically using the tricks of the best robots from the year before.

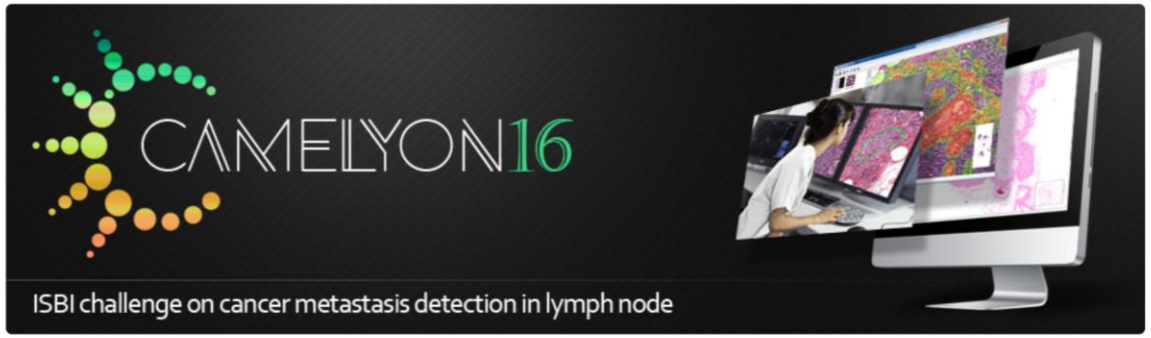
https://www.robocup.org

Challenges in Medical Image Analysis

https://grand-challenge.org/challenges/



Challenges on cancer metastasis detection in lymph node sections (Radboud UMC, Nijmegen)



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The CAMELYON16 challenge has ended in November 2016
PLEASE CHECK OUT CAMELYON17:
https://camelyon17.grand-challenge.org

Overview

The goal of this challenge is to evaluate new and existing algorithms for automated detection of metastases in hematoxylin and eosin (H&E) stained whole-slide images of lymph node sections. This task has a high clinical relevance but requires large amounts of reading time from pathologists. Therefore, a successful solution would hold great promise to reduce the workload of the pathologists while at the same time reduce the subjectivity in diagnosis. This will be the first challenge using whole-slide images in histopathology. The challenge will run

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Overview

The CAMELYON17 challenge is still open for submissions!

Built on the success of its predecessor, CAMELYON17 is the second grand challenge in pathology organised by the Diagnostic Image Analysis Group (DIAG) and Department of Pathology of the Radboud University Medical Center (Radboudumc) in Nijmegen, The Netherlands.

The goal of this challenge is to evaluate new and existing algorithms for automated detection and classification of breast cancer metastases in whole-slide images of histological lymph node sections. This task has high clinical relevance and would normally require extensive microscopic assessment by pathologists. The presence of metastases in lymph nodes has therapeutic implications for breast cancer patients. Therefore, an automated solution would hold great promise to reduce the workload of pathologists while at the same time reduce the subjectivity in diagnosis.

Last year at ISBI, we organised the highly successful CAMELYON16 grand challenge, in which 32 submissions from as many as 23 research groups were received. This was the first

JAMA paper about the Camelyon Challenge

Original Investigation

December 12, 2017

Diagnostic Assessment of Deep Learning Algorithms for Detection of Lymph Node Metastases in Women With Breast Cancer

Babak Ehteshami Bejnordi, MS[1]; Mitko Veta, PhD[2]; Paul Johannes van Diest, MD, PhD[3]; Bram van Ginneken, PhD[1]; Nico Karssemeijer, PhD[1]; Geert Litjens, PhD[4]; Jeroen A. W. M. van der Laak, PhD[4]; and the CAMELYON16 Consortium

Author Affiliations

JAMA. 2017;318(22):2199-2210. doi:10.1001/jama.2017.14585

Key Points

Question What is the discriminative accuracy of deep learning algorithms compared with the diagnoses of pathologists in detecting lymph node metastases in tissue sections of women with breast cancer?

Camelyon Challenge in the news

Voor het eerst is aangetoond dat een zelflerend computersysteem beter in staat is om uitgezaaide borstkanker te ontdekken dan een patholoog die onder normale tijdsdruk werkt. Dat blijkt uit een onderzoek van het Radboud UMC.

In de studie werden plakjes lymfeklier van patiënten ingevoerd in verschillende computersystemen om die te controleren op uitzaaiingen. Normaal gesproken onderzoekt een patholoog deze onder een microscoop.

GESCHREVEN DOOR

Machteld Veen

Redacteur Nieuwsuur

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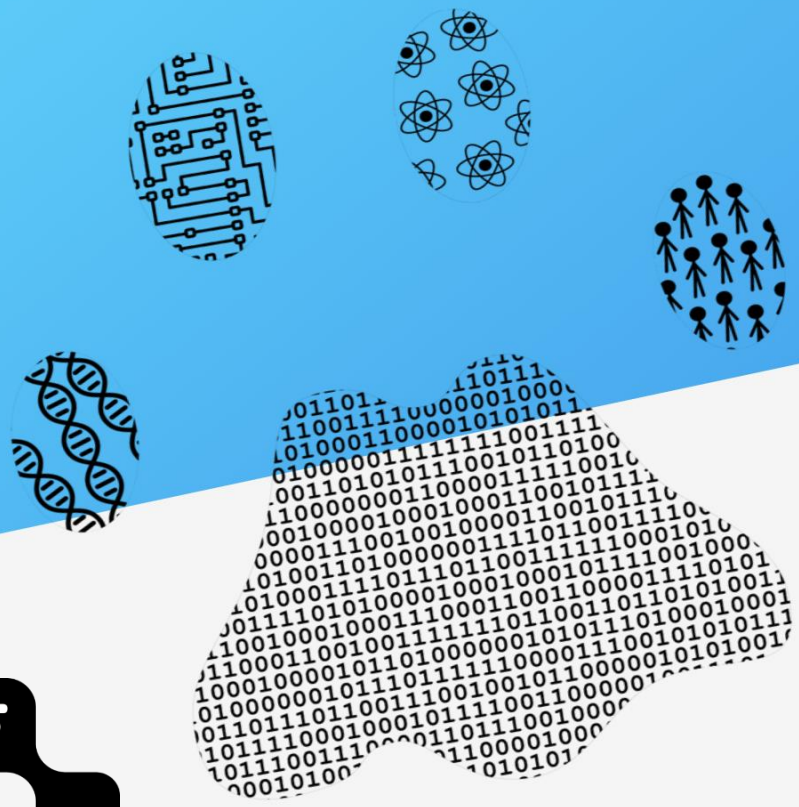

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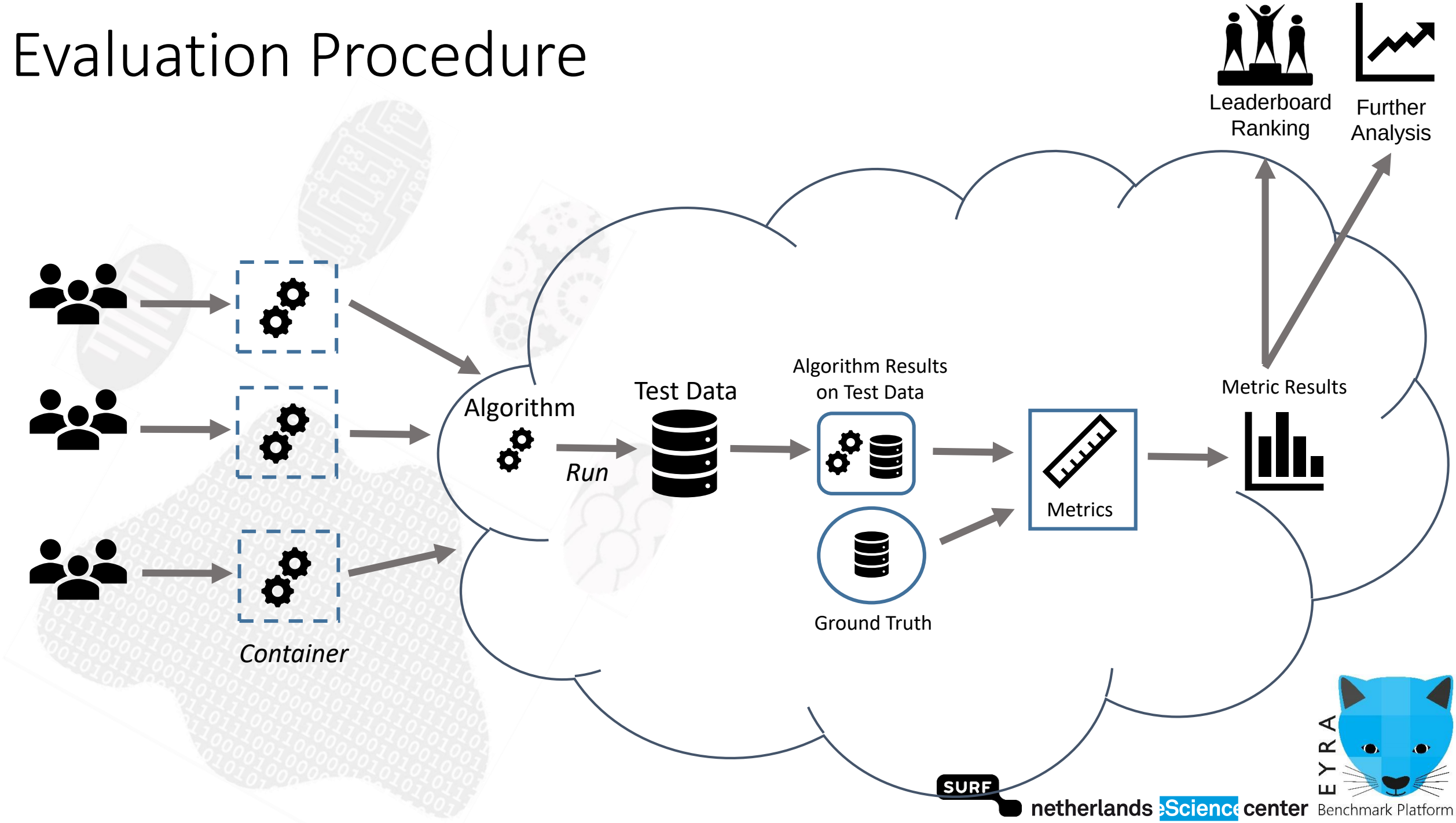
A benchmark is an online evaluation framework that uses data, truth and metrics to evaluate the performance of automatic algorithms, submitted by participants, with respect to a research problem.

Evaluation Procedure



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Combining the output of algorithms

Van Ginneken, Bram, et al. "Comparing and combining algorithms for computer-aided detection of pulmonary nodules in computed tomography scans: the ANODE09 study." *Medical image analysis* 14.6 (2010): 707-722.

Results show a substantial performance difference between algorithms, and demonstrate that combining the output of algorithms leads to marked performance improvements.

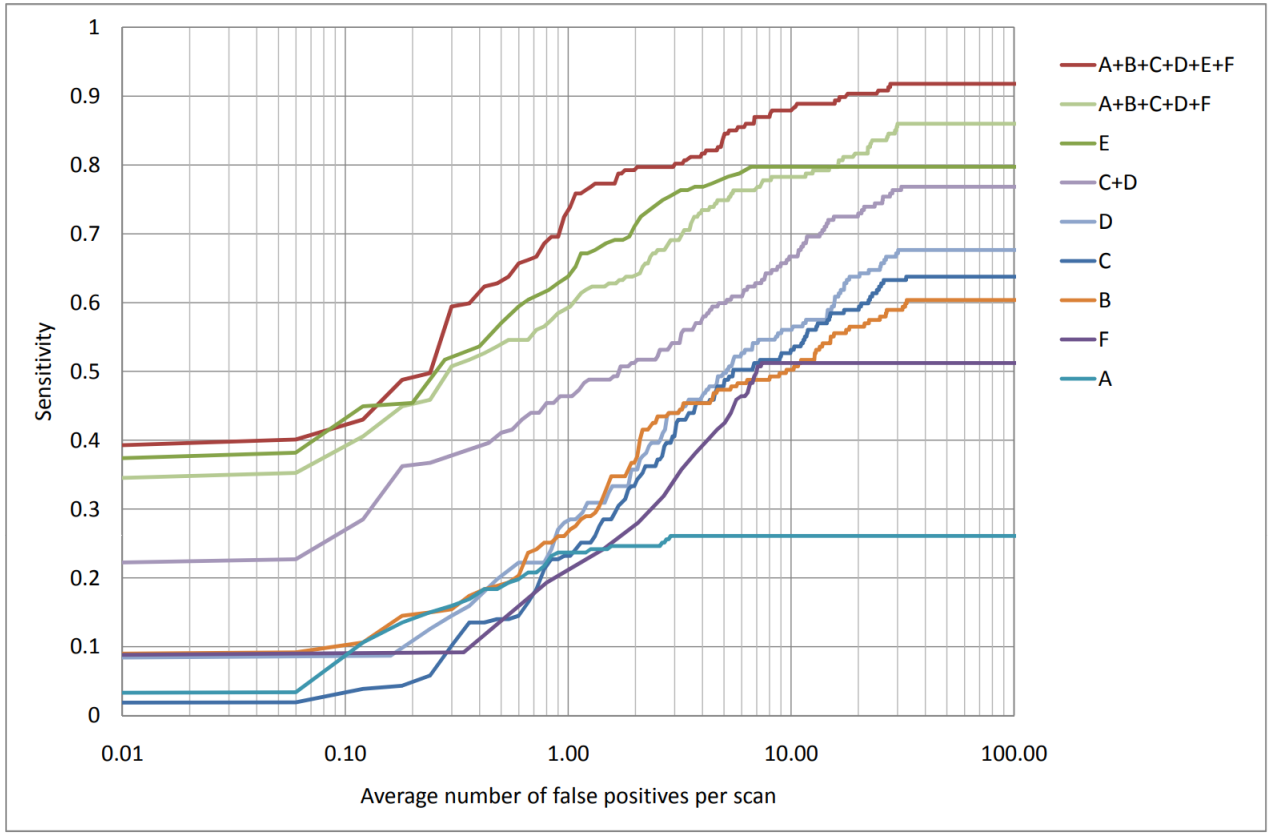
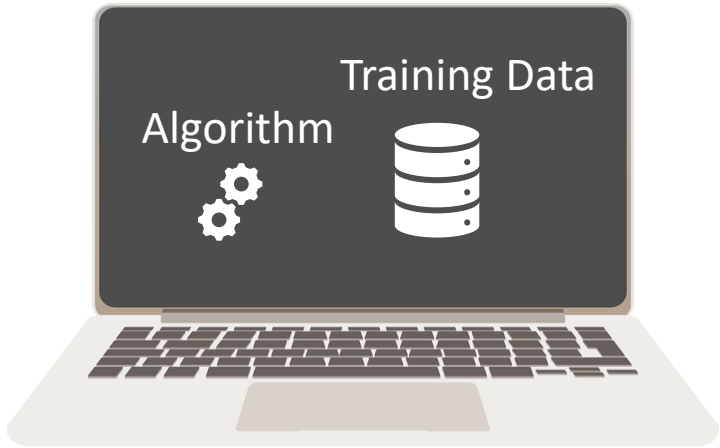


Figure 2: FROC curves of all six systems and three combinations. The horizontal axis is logarithmic and covers four orders of magnitude.

To consider for the FRB detection benchmark

- Training data (data used for tuning software) should be representative of test data
- Preferably cover wide range of telescopes
- Where do we expect to find differences in performance, make sure that evaluation (data, ground truth, metrics) reflects strengths of different software packages



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