

grand-challenge.org

October 25, 2022

Bram van Ginneken, Kiran Vaidhya Venkadesh, Anindo Saha

Radboud University Medical Center, Nijmegen, The Netherlands

Radboudumc

Grand Challenge

A platform for end-to-end development of machine learning solutions in biomedical imaging.



 74,000+ users

 331 challenges

 2,024 algorithms



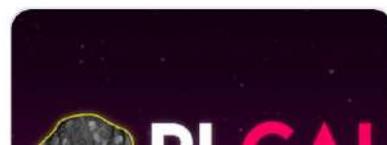
How to run a challenge? MICCAI webinar on Oct 25th 2022

The MICCAI Special Interest Group (SIG) for Challenges is hosting a webinar on How to run a challenge? on Oct 25th, 2022 at 1 pm GMT. Bram van Ginneken, Kiran Vaidhya Venkadesh, and Anindo Saha will present how to use Grand Challenge for organizing high-profile challenges. Jake Albrecht from Sage will present tips for challenge organizers on how to...

FEATURED CHALLENGES

Participate in a challenge

Organize your own challenge



Problem

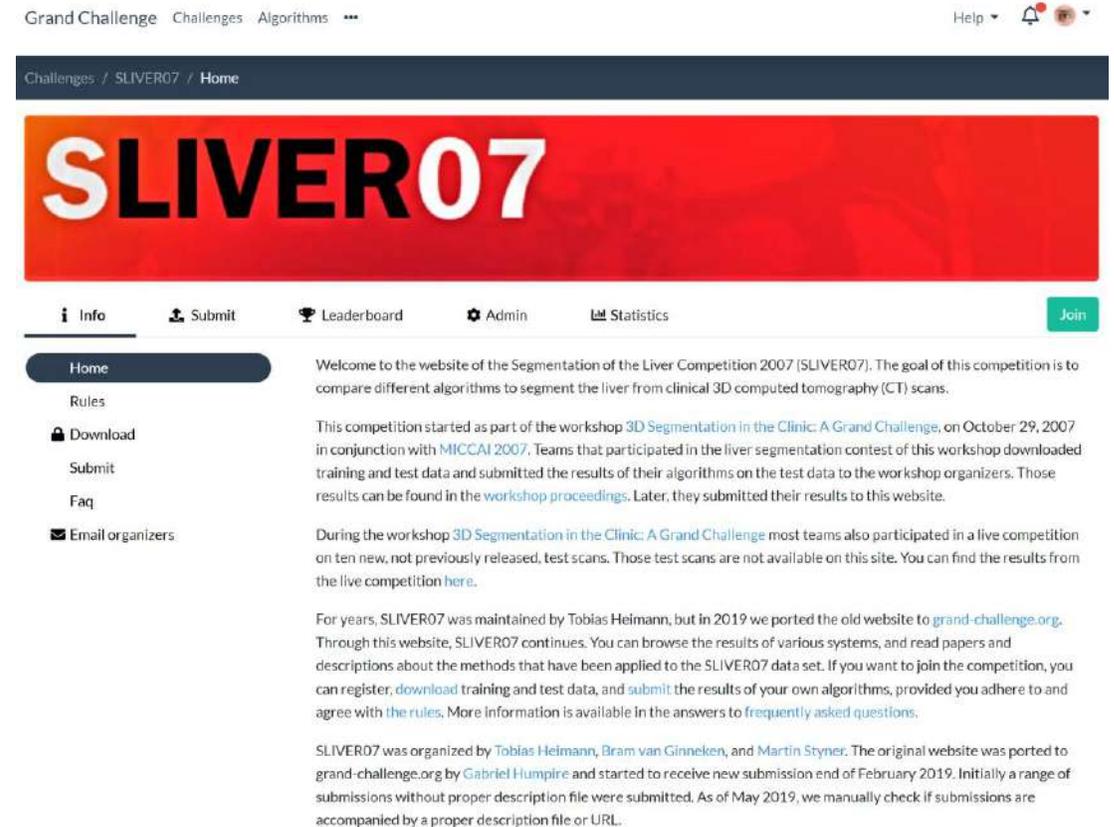
- Researcher develops an algorithm that takes a medical image as input (e.g., an abdomen CT scan) and produces some output (e.g., a liver segmentation)
- Researcher shows results on some locally collected test cases, reports some metrics (e.g., Dice scores) and maybe compares scores to scores reported in other papers that address the same task
- But these numbers are not really comparable...

Problem

- Researcher develops an algorithm that takes a medical image as input (e.g., an abdomen CT scan) and produces some output (e.g., a liver segmentation)
- Researcher shows results on some locally collected test cases, reports some metrics (e.g., Dice scores) and maybe compares scores to scores reported in other papers that address the same task
- But these numbers are not really comparable...

Solution

- Organize a challenge!
- Invite all researchers in the world with an algorithm for the same task to participate
- Fair comparison



The screenshot shows the website for the SLIVER07 challenge. At the top, there is a navigation bar with links for "Grand Challenge", "Challenges", "Algorithms", and "Help". Below this is a dark blue header with the text "Challenges / SLIVER07 / Home". The main content area features a large red banner with the text "SLIVER07" in white. Below the banner is a navigation menu with links for "Info", "Submit", "Leaderboard", "Admin", and "Statistics", along with a "Join" button. The main content area is divided into two columns. The left column contains a sidebar with links for "Home", "Rules", "Download", "Submit", "Faq", and "Email organizers". The right column contains the main text, which includes a welcome message, a description of the competition, and information about the workshop and the competition's history.

Grand Challenge Challenges Algorithms ... Help

Challenges / SLIVER07 / Home

SLIVER07

Info Submit Leaderboard Admin Statistics Join

Home

Rules

Download

Submit

Faq

Email organizers

Welcome to the website of the Segmentation of the Liver Competition 2007 (SLIVER07). The goal of this competition is to compare different algorithms to segment the liver from clinical 3D computed tomography (CT) scans.

This competition started as part of the workshop [3D Segmentation in the Clinic: A Grand Challenge](#), on October 29, 2007 in conjunction with [MICCAI 2007](#). Teams that participated in the liver segmentation contest of this workshop downloaded training and test data and submitted the results of their algorithms on the test data to the workshop organizers. Those results can be found in the [workshop proceedings](#). Later, they submitted their results to this website.

During the workshop [3D Segmentation in the Clinic: A Grand Challenge](#) most teams also participated in a live competition on ten new, not previously released, test scans. Those test scans are not available on this site. You can find the results from the live competition [here](#).

For years, SLIVER07 was maintained by Tobias Heimann, but in 2019 we ported the old website to [grand-challenge.org](#). Through this website, SLIVER07 continues. You can browse the results of various systems, and read papers and descriptions about the methods that have been applied to the SLIVER07 data set. If you want to join the competition, you can register, [download](#) training and test data, and [submit](#) the results of your own algorithms, provided you adhere to and agree with [the rules](#). More information is available in the answers to [frequently asked questions](#).

SLIVER07 was organized by [Tobias Heimann](#), [Bram van Ginneken](#), and [Martin Styner](#). The original website was ported to [grand-challenge.org](#) by [Gabriel Humpire](#) and started to receive new submission end of February 2019. Initially a range of submissions without proper description file were submitted. As of May 2019, we manually check if submissions are accompanied by a proper description file or URL.

Problem

- Researcher develops an algorithm that takes a medical image as input (e.g., an abdomen CT scan) and produces some output (e.g., a liver segmentation)
- Researcher shows results on some locally collected test cases, reports some metrics (e.g., Dice scores) and maybe compares scores to scores reported in other papers that address the same task
- But these numbers are not really comparable...

Solution

- Organize a challenge!
- Invite all researchers in the world with an algorithm for the same task to participate
- Fair comparison and a nice review of the SOTA

IEEE TRANSACTIONS ON MEDICAL IMAGING, VOL. 28, NO. 8, AUGUST 2009

1251

Comparison and Evaluation of Methods for Liver Segmentation From CT Datasets

Tobias Heimann*, Bram van Ginneken, *Member, IEEE*, Martin A. Styner, *Member, IEEE*, Yulia Arzhaeva, Volker Aurich, Christian Bauer, Andreas Beck, Christoph Becker, Reinhard Beichel, *Member, IEEE*, György Bekes, Fernando Bello, *Member, IEEE*, Gerd Binnig, Horst Bischof, *Member, IEEE*, Alexander Bornik, Peter M. M. Cashman, Ying Chi, Andrés Córdova, Benoit M. Dawant, Márta Fidrich, Jacob D. Furst, Daisuke Furukawa, Lars Grenacher, Joachim Hornegger, *Member, IEEE*, Dagmar Kainmüller, Richard I. Kitney, Hidefumi Kobatake, Hans Lamecker, Thomas Lange, Jeongjin Lee, Brian Lennon, Rui Li, Senhu Li, Hans-Peter Meinzer, *Member, IEEE*, Gábor Németh, Daniela S. Raicu, Anne-Mareike Rau, Eva M. van Rikxoort, Mikael Rousson, László Ruskó, Kinda A. Saggi, Günter Schmidt, Dieter Seghers, Akinobu Shimizu, *Member, IEEE*, Pieter Slagmolen, Erich Sorantin, Grzegorz Soza, Ruchaneewan Susomboon, Jonathan M. Waite, Andreas Wimmer, and Ivo Wolf

Abstract—This paper presents a comparison study between 10 automatic and six interactive methods for liver segmentation from contrast-enhanced CT images. It is based on results from the “MICCAI 2007 Grand Challenge” workshop, where 16 teams evaluated their algorithms on a common database. A collection of 20 clinical images with reference segmentations was provided to train and tune algorithms in advance. Participants were also allowed to use additional proprietary training data for that purpose. All teams then had to apply their methods to 10 test datasets and submit the obtained results. Employed algorithms include statistical shape models, atlas registration, level-sets, graph-cuts and rule-based systems. All results were compared to reference segmentations five error measures that highlight different aspects of segmentation accuracy. All measures were combined according to a specific scoring system relating the obtained values to human expert variability. In general, interactive methods reached higher average scores than automatic approaches and featured a better consistency of segmentation quality. However, the best automatic methods (mainly based on statistical shape models with some additional free deformation) could compete well on the majority of test images. The study provides an insight in performance of different segmentation approaches under real-world conditions and highlights achievements and limitations of current image analysis techniques.

in journals. Although paper commonly include an objective evaluation these days, most of the experiments exhibit two severe shortcomings. Firstly, new algorithms are generally not compared sufficiently against current state of the art methods. While in some rare cases a new technique allows to resolve a formerly unsolved problem, the vast majority of published works present gradual improvements or variations to existing solutions. Each variation may be evaluated against (and proven better than) the original solution, but how do different improvements of the same method compare to each other? And how do they compare to methods employing a completely different technique? As most algorithms are not freely available and re-implementation often is too tedious and time-consuming, comprehensive comparisons that would answer this kind of questions are still rare. Secondly, the data employed for evaluation is typically not representative of the real-world images used in the clinic. To be of practical value, algorithms have to cope with data from different sources, acquired with varying protocols, and featuring artifacts and pathology. As many research groups—especially the ones rooted in engineering or

Problem

- Organizing and running a challenge is an awful lot of work
- After a while the organizer moves on, and the challenge website dies ...

Problem

- Organizing and running a challenge is an awful lot of work
- After a while the organizer moves on, and the challenge website dies ...

Solution

- Use grand-challenge.org
- Implement what happens when a participating team uploads a result in a container
- The challenge can run forever!

The screenshot shows the Grand Challenge website interface. At the top, there are navigation links for "Grand Challenge", "Challenges", and "Algorithms". On the right, there are links for "Help", a notification bell, and a user profile icon. Below the navigation is a breadcrumb trail: "Challenges / LOLA11 / Evaluation Methods". The main header features the text "LOLA11" in large white letters over a colorful map background. A secondary navigation bar includes icons for "Info", "Forum", "Teams", "Submit", "Leaderboard", "Admin", "Statistics", and a "Join" button. On the left side, there is a sidebar menu with categories: "General Settings", "Pages", "Users" (with sub-items "Admins (5)", "Participants (842)", and "Participation Requests"), "Phases", "Challenge Evaluation Settings", "Add a new Phase", "Methods", "Submissions", and "Evaluations". The "Methods" section is currently active, displaying a table of evaluation methods. The table has columns for "ID", "Created", "Phase", "User", and "SHA".

ID	Created	Phase	User	SHA
13fe87be-bb6d-4d44-a173-0182bbb39d55	Jan. 31, 2022, 11:57 a.m.	Challenge	jmsmkn	sha256:3c3d1c32390841493862bd4f69132dc92191d576007f6
9140564f-826f-4e9e-bccb-c18de7fc743c	April 4, 2018, 4:24 p.m.	Challenge	jamesmeakin.diag	
c8557184-0cf4-4bed-	April 4, 2018	Challenge	jamesmeakin.diag	

Problem

- Organizing and running a challenge is an awful lot of work
- After a while the organizer moves on, and the challenge website dies ...

Solution

- Use grand-challenge.org
- Implement what happens when a participating team uploads a result in a container
- The challenge can run forever!

The screenshot shows the Grand Challenge website documentation page for Automated Evaluation. The page has a dark blue header with navigation links: Grand Challenge, Challenges, Algorithms, and a menu icon. On the right, there are links for Help, a notification bell, and a user profile icon. Below the header is a breadcrumb trail: Documentation / Challenges / Create your own Challenge / Type 1 challenge setup / Automated evaluation. The main content area features a left sidebar with a navigation menu, a top navigation bar with 'Page overview', 'Add', and 'Edit' buttons, and a search box. The main heading is 'Automated Evaluation'. The text explains that every challenge has a unique way of objectively evaluating incoming submissions, often requiring Docker containers for dependencies. It then introduces 'evalutils', a tool that simplifies creating evaluation containers for grand-challenge.org. A diagram at the bottom shows the workflow: 'Bring your own evaluation scripts' (represented by a clipboard icon) leads to 'evalutils', which then leads to 'docker' (represented by the Docker whale logo).

Grand Challenge Challenges Algorithms ... Help

Documentation / Challenges / Create your own Challenge / Type 1 challenge setup / Automated evaluation

Getting started ▾
Algorithms ▾
Challenges ▾
Participate in a Challenge ▾
Create your own Challenge ▾
General setup ▾
Type 1 challenge setup ▾
▪ Data storage
▪ Automated evaluation
Type 2 challenge setup ▾
Closing / deleting your challenge
Reader Studies ▾
Archives ▾
Interfaces
Grand Challenge API ▾

Page overview Add Edit Search...

Automated Evaluation

Every challenge has a unique way of objectively evaluating incoming submissions. More often than not, the evaluation scripts come with a set of dependencies and computational environments that are difficult to replicate in the host server. Therefore, we have decided that every challenge organizer has to provide a Docker container that packages the evaluation scripts. This container will run on our servers to compute the evaluation scripts necessary for an incoming submission.

Building your evaluation container

To make the process easier, we created [evalutils](#). Evalutils helps challenge administrators to easily create evaluation containers for grand-challenge.org. It helps you create a project structure, load and validate submissions, and package the evaluation scripts in a Docker container compatible with the requirements of grand-challenge.org. Note that you do not *have* to use evalutils.

Bring your own evaluation scripts → evalutils → docker

Problem

- Organizing and running a challenge is an awful lot of work
- After a while the organizer moves on, and the challenge website dies ...

Solution

- Use grand-challenge.org
- Implement what happens when a participating team uploads a result in a container
- The challenge can run forever!

Grand Challenge Challenges Algorithms ...

Help ▾   ▾

mm/dd/yyyy

Estimated end date for this challenge. Please note that we aim to keep challenges open for submission for at least 3 years after the official end date if possible.

- We agree to support this challenge for up to 5 years.

High-quality challenges typically remain relevant for years. Only when the submitted results to a challenge are hard to improve upon, or when a new challenge has been set up for a similar task that is more attractive to the research community, may it make sense to close a challenge. We have designed grand-challenge.org to keep algorithms and challenges long-term available. We expect the life cycle of a challenge to last between 3-5 years. Would you be willing to commit support for such a period? The amount of work would be minimal, but it would require that the organizing team remains responsive, and answers questions and queries in the forum.

Problem

- My challenge was a huge success
- The top entries on the leaderboard are great solutions
- So many researchers, and even clinicians, would like to use those solutions
- But they can't. They tried to contact the developers of the top entries but got no reply
- Now they are emailing me, the challenge organizer, but I have to explain them these are not my algorithms
- Some of the top teams released their code, but I can't compile it...

Problem

- My challenge was a huge success
- The top entries on the leaderboard are great solutions
- So many researchers, and even clinicians, would like to use those solutions
- But they can't. They tried to contact the developers of the top entries but got no reply
- Now they are emailing me, the challenge organizer, but I have to explain them these are not my algorithms
- Some of the top teams released their code, but I can't compile it...

Solution

- Type 2 challenges on grand-challenge.org
- Participants upload a container image of their algorithm; this algorithm is directly available on grand-challenge.org



Qualification (last submission) Leaderboard

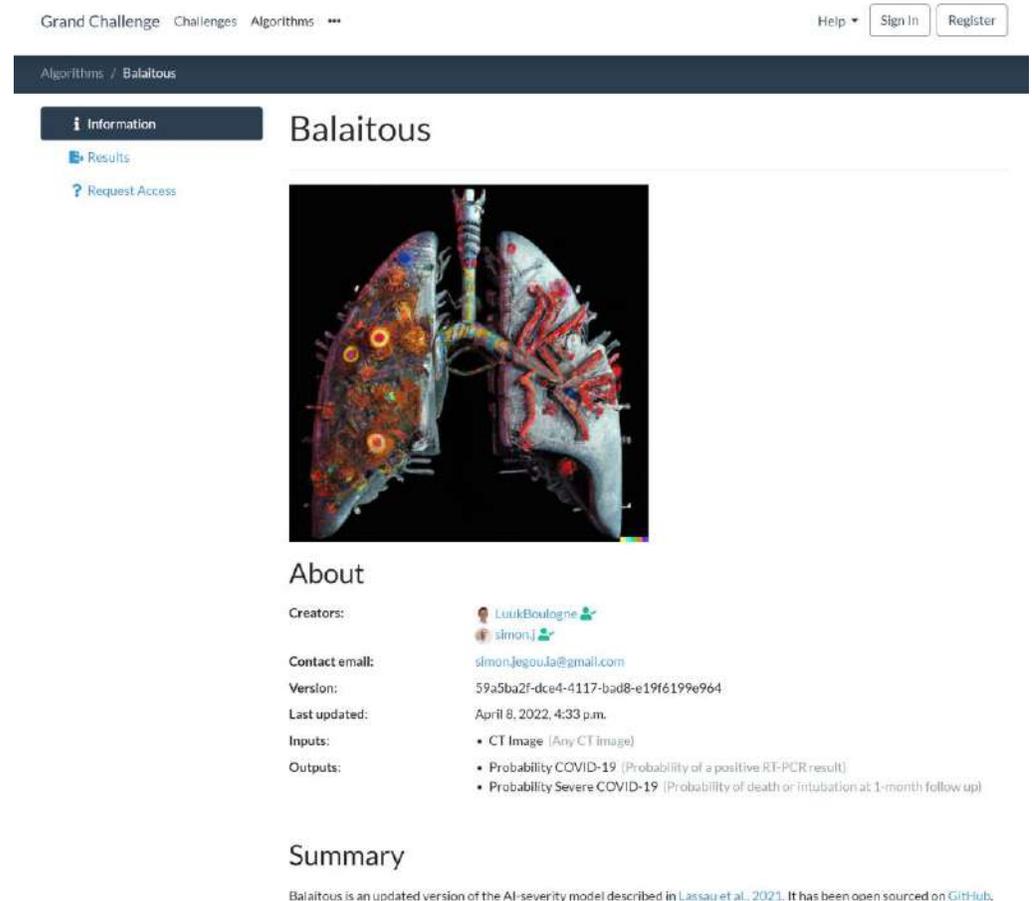
		Search:			
		Additional metrics ▾	Show all metrics		
#	ti	User (Team)	Algorithm	Created	AUC Severity
1st		simon.j	Balaitous	9 April 2022	0.8044
2nd		lorenjul (Code 1055)	Chatschapuri-Algorithm	13 April 2022	0.7868
3rd		titericz	Giba-Algorithm	14 April 2022	0.7837
4th		etro	ETRO VUB 3	13 April 2022	0.7752
5th		miriamella (uaux2)	Stoic2021 - COVID-19 lung ct scans - team Augsburg	12 April 2022	0.7662
6th		mayugmaniparambil (hal9000)	simple-baseline	14 April 2022	0.7656
7th		conga (Flying Bird)	STOIC-2022-0412	13 April 2022	0.7479
8th		mariover95 (SYNLAB-SDN)	2StepsV2	13 April 2022	0.7373
9th		bigPYJ (SJTU426)	STOIC2021-SJTU426	13 April 2022	0.7288
10th		yilong8 (UofA)	STOIC COVID-19 Baseline	13 April 2022	0.7230

Problem

- My challenge was a huge success
- The top entries on the leaderboard are great solutions
- So many researchers, and even clinicians, would like to use those solutions
- But they can't. They tried to contact the developers of the top entries but got no reply
- Now they are emailing me, the challenge organizer, but I have to explain them these are not my algorithms
- Some of the top teams released their code, but I can't compile it...

Solution

- Type 2 challenges on grand-challenge.org
- Participants upload a container image of their algorithm; this algorithm is directly available on grand-challenge.org



The screenshot shows the 'Balaitous' algorithm page on the Grand Challenge platform. The page includes a navigation bar with 'Grand Challenge', 'Challenges', and 'Algorithms'. Below the navigation bar, there are links for 'Information', 'Results', and 'Request Access'. The main content area features a 3D visualization of human lungs with various colored spots and lines, representing the algorithm's output. Below the visualization, there is an 'About' section with the following details:

- Creators:** LuukBoulogne, simon.j
- Contact email:** simon.jegou.lai@gmail.com
- Version:** 59a5ba2f-dce4-4117-bad8-e19f6199e964
- Last updated:** April 8, 2022, 4:33 p.m.
- Inputs:** CT Image (Any CT Image)
- Outputs:** Probability COVID-19 (Probability of a positive RT-PCR result), Probability Severe COVID-19 (Probability of death or intubation at 1-month follow up)

The 'Summary' section at the bottom indicates that Balaitous is an updated version of the AI-severity model described in Lassau et al., 2021, and has been open sourced on GitHub.

Problem

- I can't share my test data
- My participants cheat, they let a radiologist label the test data

Solution

- Type 2 challenges on grand-challenge.org
- Participants upload a container image of their algorithm; this algorithm is directly available on grand-challenge.org

Problem

- I can't share my training data
- The training set is so large, it's not practical for participants to download it and train systems on their own GPU

Problem

- I can't share my training data
- The training set is so large, it's not practical for participants to download it and train systems on their own GPU

Solution

- Type 3 challenges on grand-challenge.org
- Participants upload a container image of their training code; this code is trained with secret training data and produces an Algorithm directly available on grand-challenge.org

Type	Training data & labels	Test data	Test labels	Participant's Artefact	Provided by Challenge Creators
0	Open	Open	Open	Metrics	
1	Open	Open	Closed	Predictions	Evaluation Method
2	Open	Closed	Closed	Inference Algorithm	+ Test data
3	Closed	Closed	Closed	Training Algorithm	+ Training data

Medical Imaging with Deep Learning



Medical Imaging with Deep Learning (MIDL) brings the community of deep learning and medical imaging researchers, clinicians and health-care companies together for in-depth discussion and exchange of ideas. To learn more about MIDL, read our [aims and scope](#) and visit the conference sites listed above and below.

MIDL is organized by the [MIDL Foundation](#) and its [Board](#).

MIDL is inviting proposals to organize [MIDL challenges](#).

We are soliciting bids to organize [MIDL 2024](#) (deadline to submit a bid Nov. 30 2022) and [MIDL 2025](#).

[Call for challenges](#)

[Call for MIDL 2024](#)

[Call for MIDL 2025](#)

Past editions



Past events



Medical Imaging with Deep Learning

Call for challenges

Challenges have become an essential part of research in medical imaging. Challenges pose a problem and solicit solutions from participants all over the world; each solution is validated on the same test data, making for a fair comparison. Following MIDL's commitment to openness and transparency, hosting regular, high-quality challenges is a logical next step towards creating an active scientific community in the "mid" of methodological novelty and clinical impact.

MIDL is now soliciting proposals for medical image analysis challenges. We want to support several challenges every year. We will integrate these events with MIDL activities such as our online events and the yearly MIDL conference.

We aim to improve the quality of challenges and encourage the adoption of new elements in challenges that will make them more reproducible and make their output - the solutions that solve the task at hand in an efficient and effective manner - more reusable, for the research community, and for clinical end-users.

We have decided to partner with [grand-challenge.org](#) because this platform already offers many of the features that would make future challenges more reproducible, open and reusable. The platform [grand-challenge.org](#) and the MIDL challenges are supported by [Amazon Web Services](#).

How to submit?

Requests for organizing MIDL challenges can be submitted continuously and will be processed on a rolling basis. To submit your application, follow [this link](#). Make sure to indicate that the *Affiliated event* is MIDL, and make sure to include the [Structured challenge submission form](#) on the [Structured Challenge Submission System](#) site.

What do you get from us?

If your challenge is selected as a MIDL challenge:

- You will be able to host the challenge for free on [grand-challenge.org](#) and all costs for storing the algorithms that participants upload to compete in the challenge and for processing the test data are waived.
- MIDL and [grand-challenge.org](#) will advise the organizing team and provide support for data collection and data annotation. The organizing team will have a point of contact from the MIDL Board.
- We will provide participants free access to large training data sets via the [AWS Open Data Registry](#), and we will use [Zenodo](#) for making smaller data sets available.
- The best solutions to challenges will remain available as [Algorithms](#) on [grand-challenge.org](#) and can be accessed by any registered user of the platform to process new data and use this for research and development;
- Challenge organizers can provide free participation to the [yearly MIDL conference](#) for team members of top contenders;
- We may be able to provide prizes to the best performing team in the form of [AWS credits](#);
- There will be a new Challenge Paper Track at the MIDL conference for papers relating to MIDL challenges. We expect this will attract more participants to your challenge. The deadlines and review process for this Challenge Paper track will be the same as for the Short Papers and will have a high acceptance rate;
- Organizers are invited to present their challenge and its results at the MIDL conference;

What does grand-challenge.org provide?



Wiki – to create a site, add, and edit pages



User management – registration, teams, forums

What does grand-challenge.org provide?



Wiki – to create a site, add, and edit pages



User management – registration, teams, forums



Secure ways to host challenge data

Store your hidden test data as a private archive

<https://grand-challenge.org/archives>



- **Input data – private Archive** on grand-challenge.org
- **Labels – should not be added to the Archive**, you do not want participating algorithms to access the ground truth

Archives

An archive can be used to collect set of medical images, which can later be used in a reader study, challenge or algorithm. Please [contact us](#) if you would like to set up your own archive.

+ New Archive

Filter Archives

Remove Filters

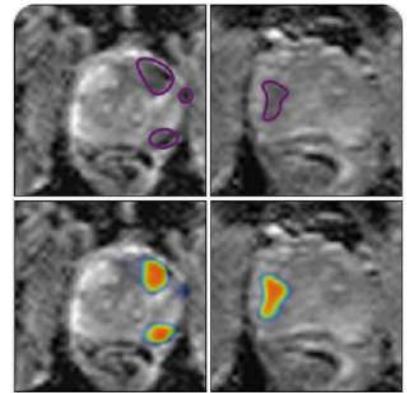
Filters included 4 of 66 total archives



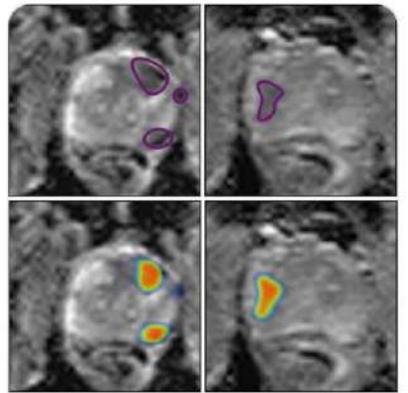
PI-CAI Testing Dataset 
PI-CAI Testing Dataset for both Open Development Phase and Closed Testing Phase



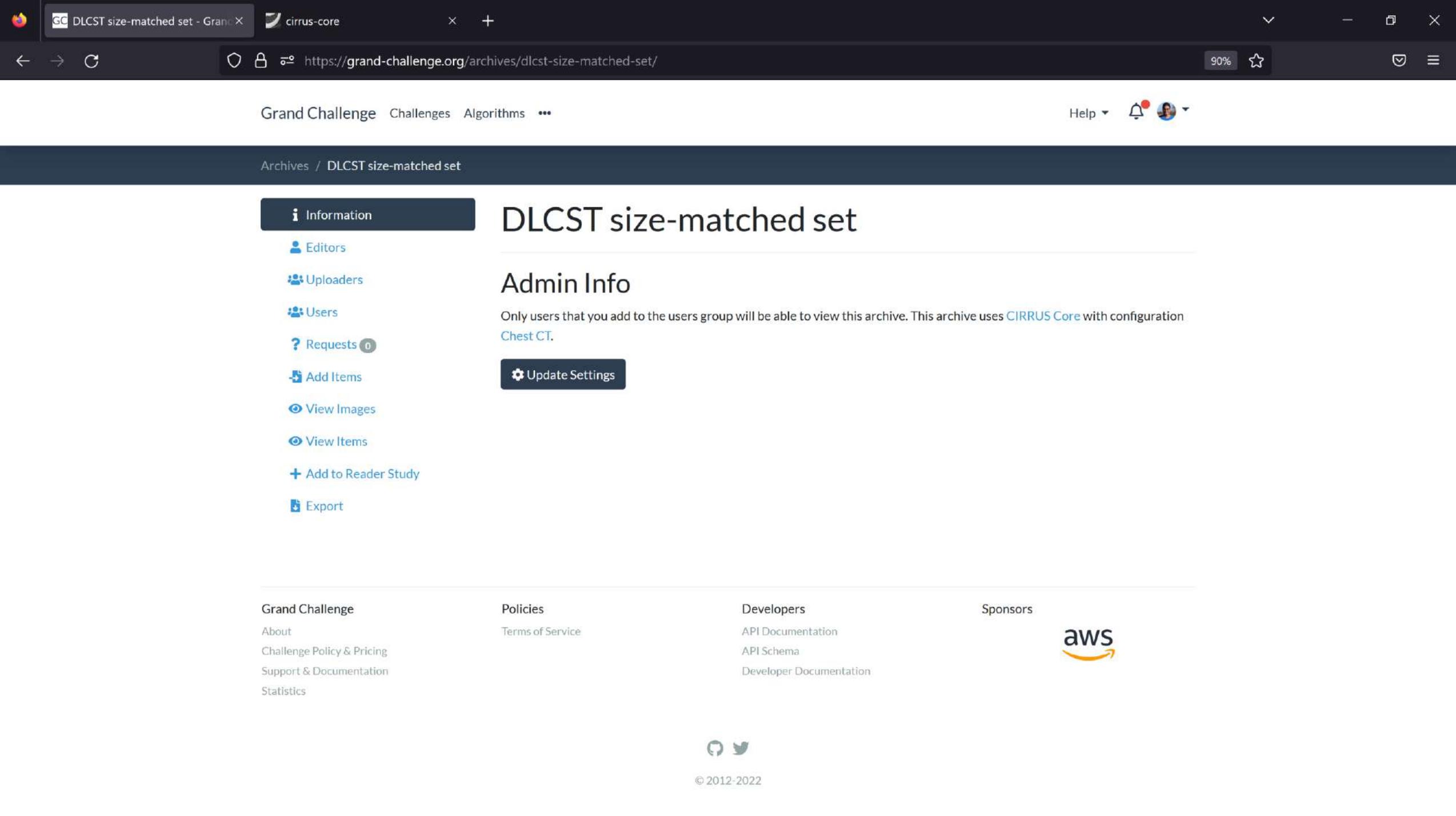
PI-CAI Open Development Phase - Validation and Tuning Dataset 
PI-CAI Open Development Phase - Validation and Tuning Dataset



Tryout Archive PI-CAI 
Tryout Archive to test algorithm submissions to the PI-CAI T2 phases



Dummy Archive PI-CAI 
Dummy archive to test T2 algorithm submission to PI-CAI



i Information

 Editors

 Uploaders

 Users

 Requests **0**

 Add Items

 View Images

 View Items

 Add to Reader Study

 Export

DLCST size-matched set

Admin Info

Only users that you add to the users group will be able to view this archive. This archive uses [CIRRUS Core](#) with configuration [Chest CT](#).

 Update Settings

Grand Challenge

- [About](#)
- [Challenge Policy & Pricing](#)
- [Support & Documentation](#)
- [Statistics](#)

Policies

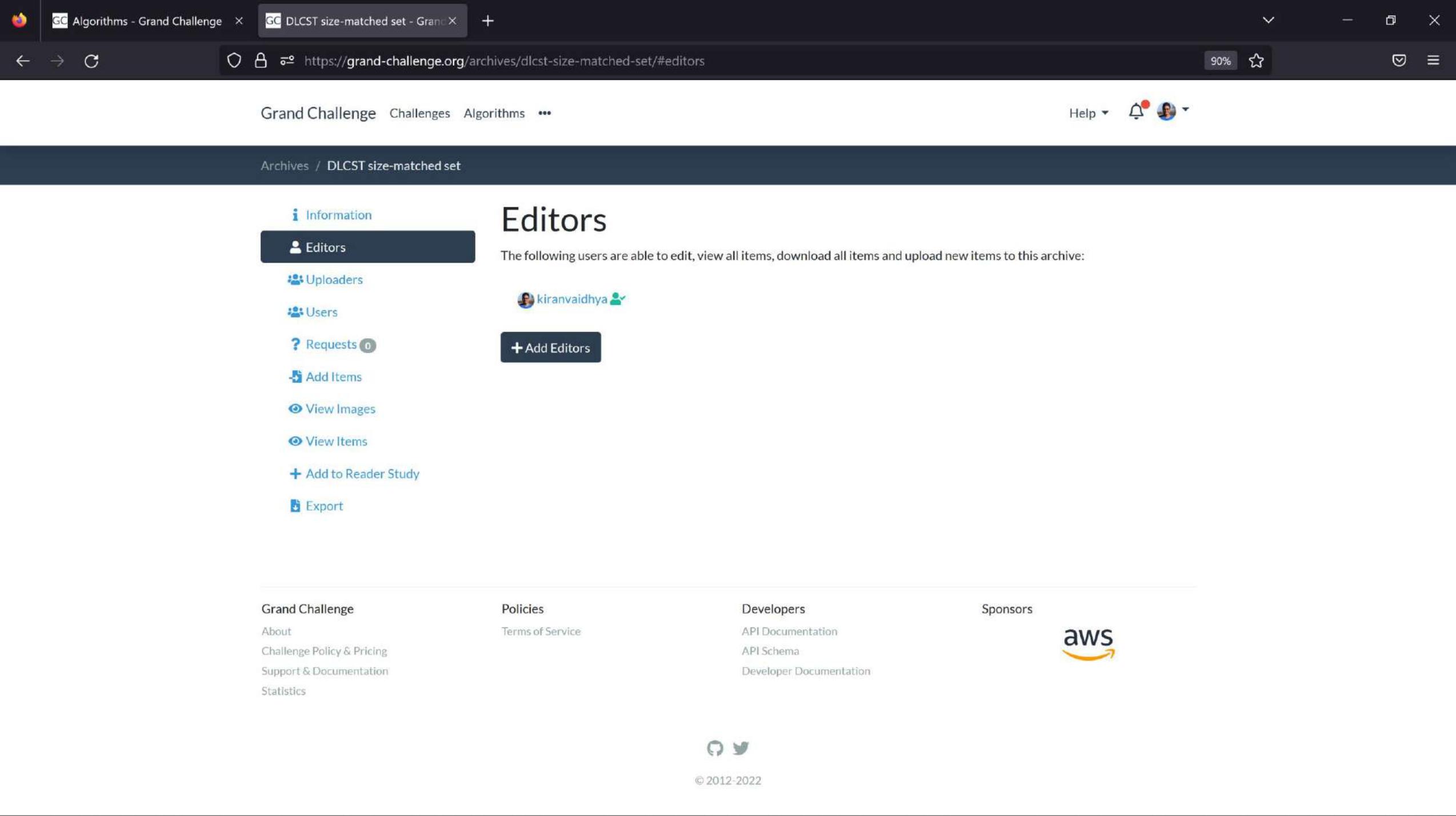
- [Terms of Service](#)

Developers

- [API Documentation](#)
- [API Schema](#)
- [Developer Documentation](#)

Sponsors





Information

Editors

Uploaders

Users

Requests 0

Add Items

View Images

View Items

Add to Reader Study

Export

Editors

The following users are able to edit, view all items, download all items and upload new items to this archive:

 kiranvaidhya 

+ Add Editors

Grand Challenge

- About
- Challenge Policy & Pricing
- Support & Documentation
- Statistics

Policies

- Terms of Service

Developers

- API Documentation
- API Schema
- Developer Documentation

Sponsors



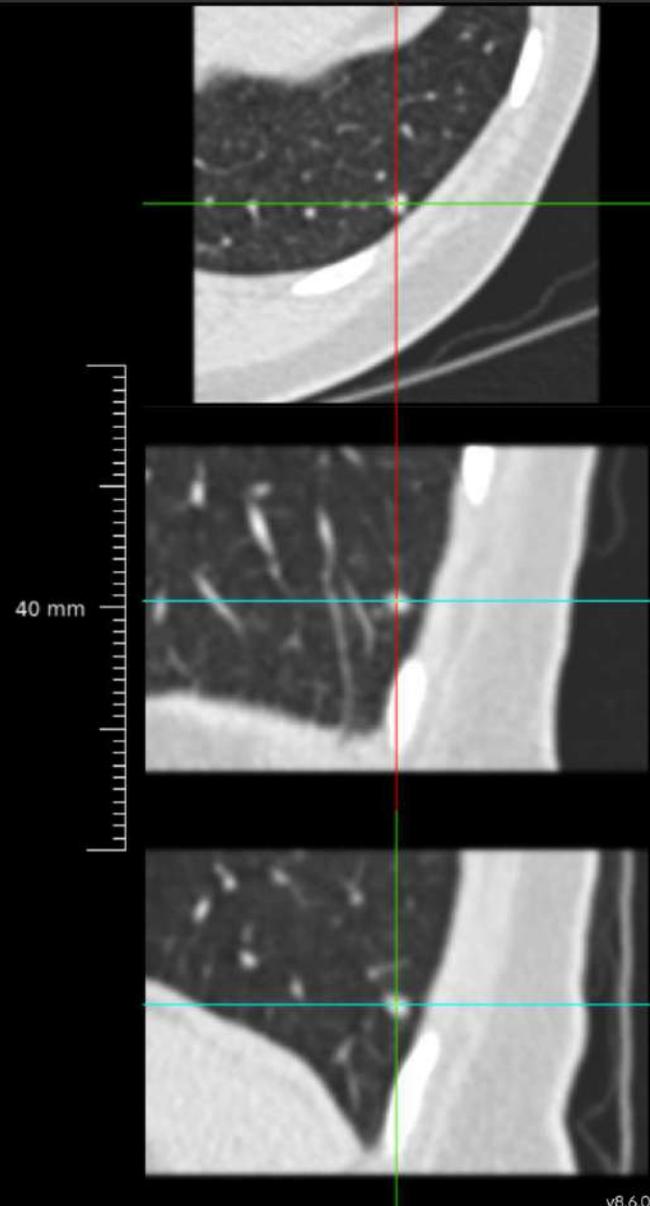
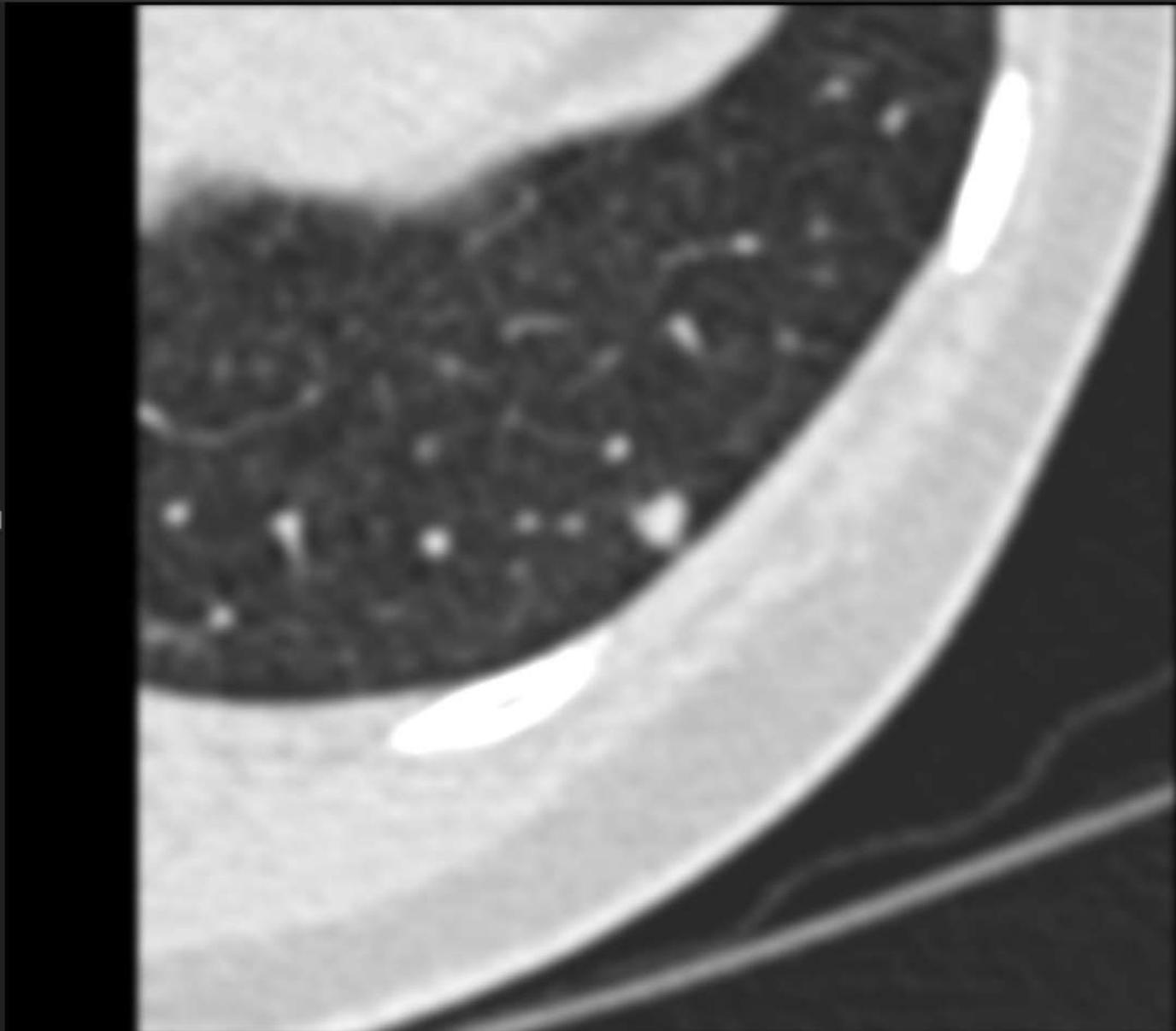
Case Information

Display

Average 0 mm

Chest -500 1500

Axial Coronal Sagittal



Algorithms – necessary for Type 2 challenges



Wiki – to create a site, add, and edit pages



User management – registration, teams, forums



Secure ways to host challenge data, **and algorithms**

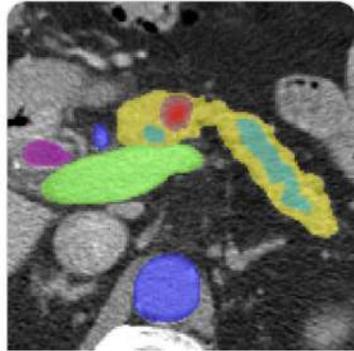
Algorithms

We have made several machine learning algorithms available that you can try out by uploading your own anonymised medical imaging data. Please [contact us](#) if you would like to make your own algorithm available here.

+ Add a new algorithm

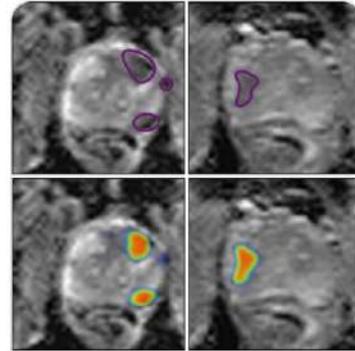
Filter Algorithms

147 algorithms found

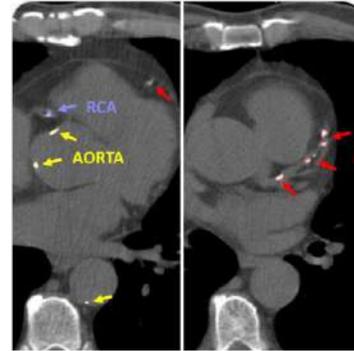


Pancreatic Ductal Adenocarcinoma Detection in CT

Article

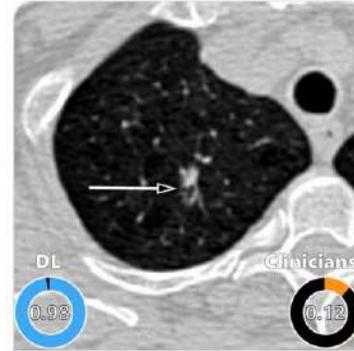


Clinically Significant Prostate Cancer Detection in bpMRI using models trained with Report Guided Annotations



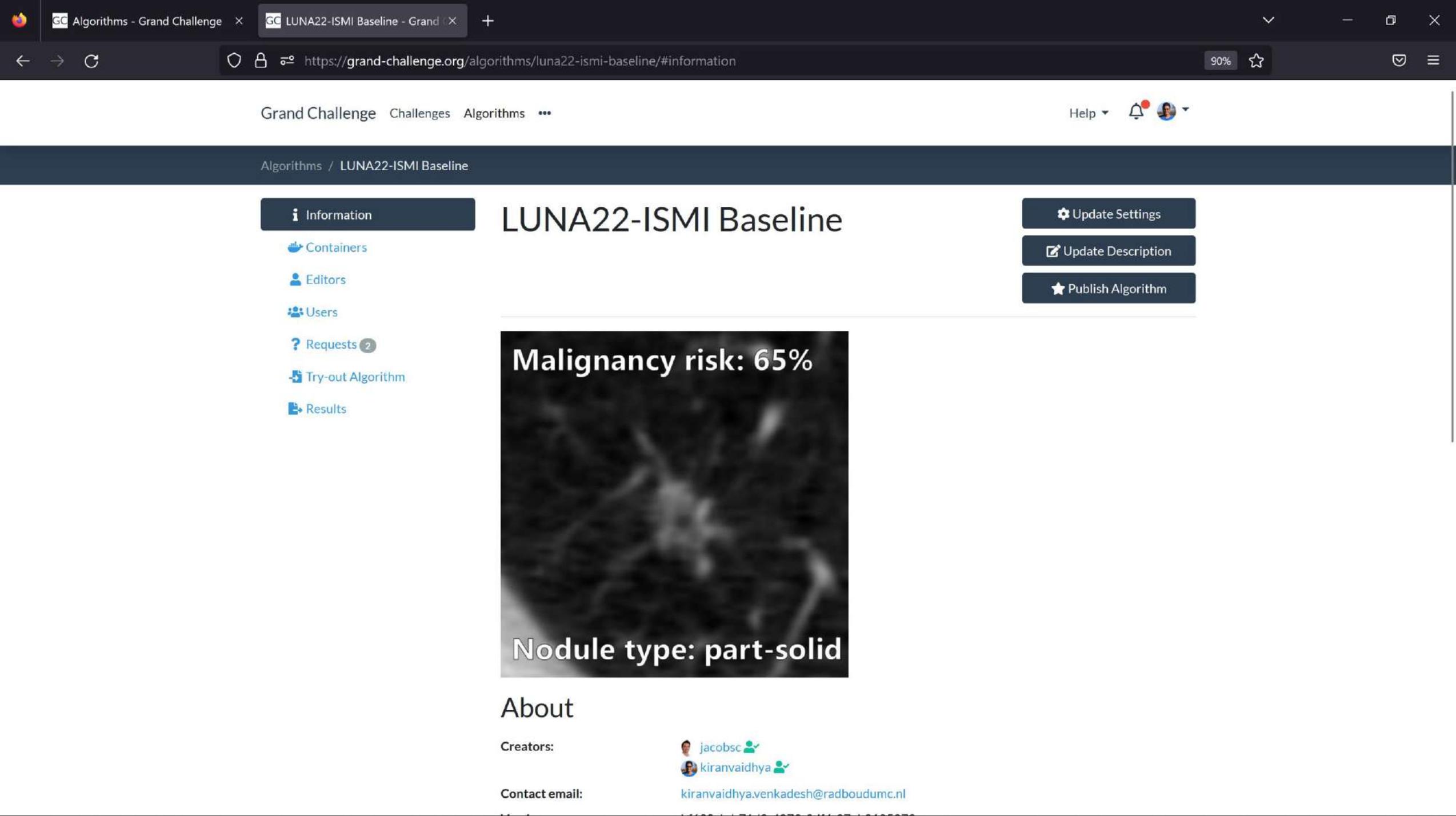
Calcium scoring in CT showing the heart

Article



Pulmonary Nodule Malignancy Prediction

Article



Information

Containers

Editors

Users

Requests 2

Try-out Algorithm

Results

LUNA22-ISMI Baseline

Update Settings

Update Description

Publish Algorithm

Malignancy risk: 65%

Nodule type: part-solid

About

Creators:

jacobsc

kiranvaidhya

Contact email:

kiranvaidhya.venkadesh@radboudumc.nl

 Information

 Containers

 Editors

 Users

 Requests ²

 Try-out Algorithm

 Results

Container Images

New container images will be automatically built when <https://github.com/DIAGNijmegen/bodyct-luna22-ismi-algorithm-baseline> is tagged. However, if you wish, you can still upload container images here.

 Update Linked Repo  Upload a Container

-  Container image uploaded by kiranvaidhya 5 months, 2 weeks ago Import Completed Inactive
-  Build Succeeded Container image from [diagnijmegen-bodyct-luna22-ismi-algorithm-baseline:v1-1-1](#) Import Completed
- Inactive
-  Build Succeeded Container image from [diagnijmegen-bodyct-luna22-ismi-algorithm-baseline:v1-1-1](#) Import Completed
- Inactive
-  Build Succeeded Container image from [diagnijmegen-bodyct-luna22-ismi-algorithm-baseline:v1-2-1](#) Import Completed
- Inactive
-  Build Succeeded Container image from [diagnijmegen-bodyct-luna22-ismi-algorithm-baseline:v1-2-2](#) Import Completed
- Active

Grand Challenge

- About
- Challenge Policy & Pricing
- Support & Documentation
- Statistics

Policies

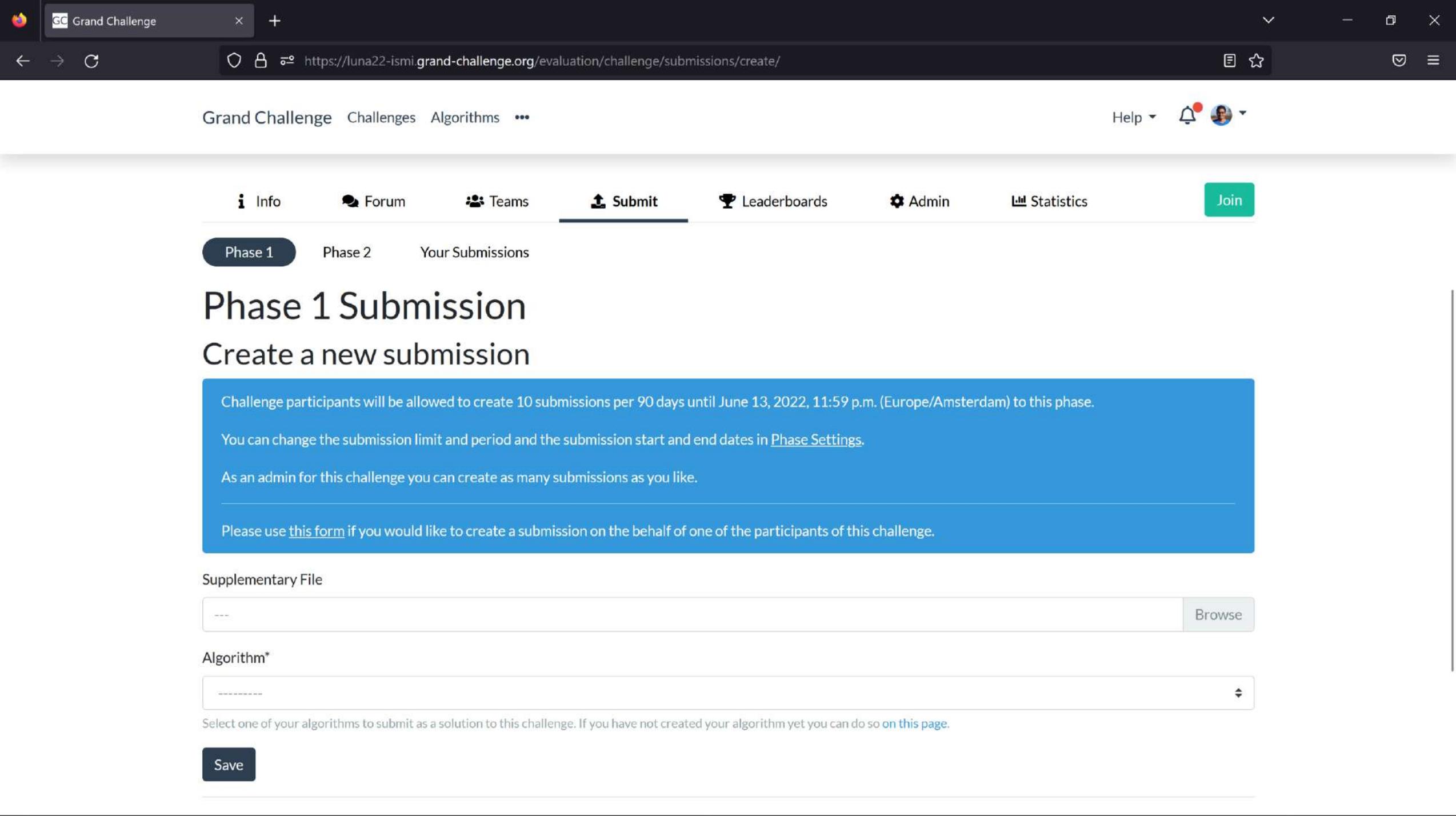
- Terms of Service

Developers

- API Documentation
- API Schema
- Developer Documentation

Sponsors





Phase 1 Submission

Create a new submission

Challenge participants will be allowed to create 10 submissions per 90 days until June 13, 2022, 11:59 p.m. (Europe/Amsterdam) to this phase.

You can change the submission limit and period and the submission start and end dates in [Phase Settings](#).

As an admin for this challenge you can create as many submissions as you like.

Please use [this form](#) if you would like to create a submission on the behalf of one of the participants of this challenge.

Supplementary File

Algorithm*

Select one of your algorithms to submit as a solution to this challenge. If you have not created your algorithm yet you can do so [on this page](#).

Save

How do I evaluate the submissions?



Wiki – to create a site, add, and edit pages



User management – registration, teams, forums



Secure ways to host challenge data, and upload algorithms



Automated evaluation

Containerize your evaluation scripts – **pip install evalutils**

- Package the ground truth in your container
- Read predictions from /input
- Evaluate and write metrics to /output/metrics.json

Upload your evaluation container

Add evaluation method

Grand Challenge Challenges Algorithms ... Help

Challenges / LOLA11 / Evaluation Methods

LOLA11

Info Forum Teams Submit Leaderboard Admin Statistics Join

Evaluation Methods

+ Add a new method

Show 10 entries Search:

ID	Created	Phase	User	SHA
13fe87be-bb6d-4d44-a173-0182bb39d55	Jan. 31, 2022, 11:57 a.m.	Challenge	jmsrkn	sha256:3c3d1c32390841493862bd4f69132dc92191d576007f3
9140564f-826f-4e9e-bccb-c18de7fc743c	April 4, 2018, 4:24 p.m.	Challenge	jamesmeakin.diag	
c8557184-0c14-4bed-854a-	April 4, 2018, 1:41 p.m.	Challenge	jamesmeakin.diag	

Inspect submissions and evaluations

Method 4d8ae7e4

Challenge: LUNA22-ismi
Phase: Phase 2
Creator: kiranvaidhya
Created: June 10, 2022, 2:46 p.m.
Image: docker/images/evaluation/method/4d8ae7e4.tar.gz
Image SHA256: sha256:aaad7e38f45eab996d676ff9
Ready: True
Status:

Evaluations for this method

Show 10 entries Search:

Created	Updated	Evaluation	Submission	Status	Result
June 13, 2022, 2:45 p.m.	June 13, 2022, 11:44 p.m.	...	...	Failed	
June 17, 2022, 12:47 p.m.	June 17, 2022, 1:17 p.m.	...	...	Succeeded	Result
June 18, 2022, 2:16 p.m.	June 18, 2022, 2:52 p.m.	...	...	Succeeded	Result
June 19, 2022, 2:25 p.m.	June 19, 2022, 2:51 p.m.	...	...	Succeeded	Result
June 19, 2022, 3:58 p.m.	June 19, 2022, 4:25 p.m.	...	...	Succeeded	Result

Very helpful for participants!

Throttle submissions

The screenshot shows a web browser window with two tabs: 'Algorithms - Grand Challenge' and 'Admin - Grand Challenge'. The address bar shows the URL <https://luna22-ismi.grand-challenge.org/evaluation/challenge/update/>. The page title is 'Grand Challenge' with navigation links for 'Challenges' and 'Algorithms'. A user profile menu is visible in the top right corner.

The main navigation bar includes links for 'Info', 'Forum', 'Teams', 'Submit', 'Leaderboards', 'Admin' (active), and 'Statistics', along with a 'Join' button. The left sidebar contains a tree view with categories: 'General Settings', 'Pages', 'Users' (with sub-items: 'Admins 2', 'Participants 17', 'Participation Requests 0'), 'Phases' (with sub-items: 'Phase 1 Evaluation Settings' (active), 'Phase 2 Evaluation Settings', 'Add a new Phase'), 'Methods', 'Submissions', and 'Evaluations'.

Update Phase 1 Phase

Phase **Submission** Scoring Leaderboard Result Detail Algorithm

- Creator must be verified**
If True, only participants with verified accounts can make submissions to this phase
- Submission limit***
10
The limit on the number of times that a user can make a submission over the submission limit period. Set this to 0 to close submissions for this phase.
- Submission limit period**
90
The number of days to consider for the submission limit period. If this is set to 1, then the submission limit is applied over the previous day. If it is set to 365, then the submission limit is applied over the previous year. If the value is not set, then the limit is applied over all time.
- Allow submission comments**
Allow users to submit comments as part of their submission.
- Supplementary file choice***
Optional
Show a supplementary file field on the submissions page so that users can upload an additional file along with their predictions file as part of their submission (eg, include a pdf description of their method). Off turns this feature off, Optional means that including the file is optional for the user, Required means that the user must upload a supplementary file.

How do I compare submissions?



Wiki – to create a site, add, and edit pages



User management – registration, teams, forums



Secure ways to host challenge data, and upload algorithms



Automated evaluation



Automated leaderboard management

Connect evaluation metrics to the leaderboard

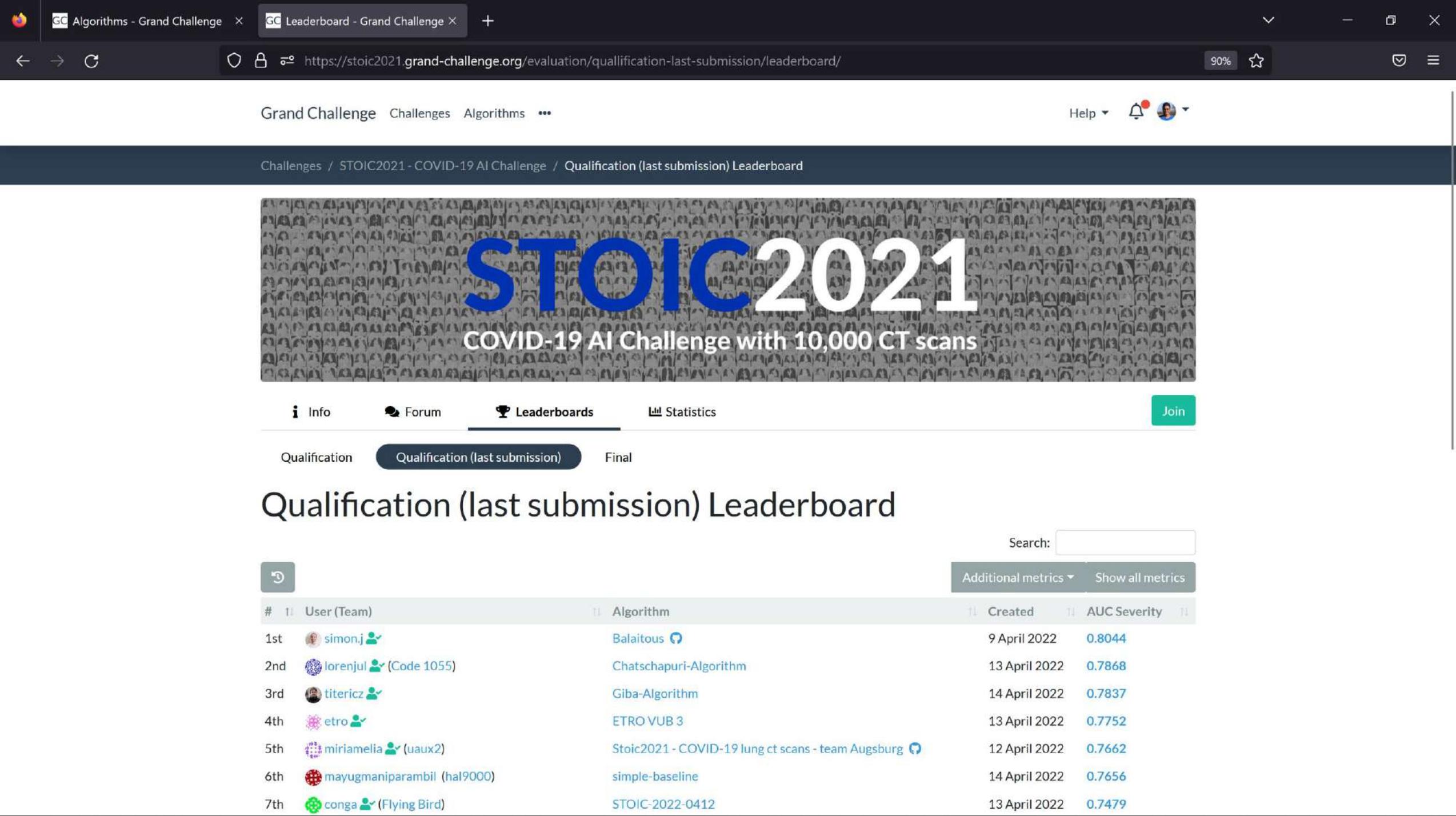
```
{  
  "malignancy_risk_auc": 0.85,  
  "nodule_type_accuracy": 0.75  
}
```

The screenshot displays the 'Update Phase 1 Phase' configuration page. The left sidebar contains navigation options: Info, Forum, Submit, Leaderboard, Admin, General Settings, Pages, Users (Admins: 2, Participants: 14, Participation Requests: 0), Phases (Phase 1 Evaluation Settings), Add a new Phase, Methods, Submissions, and Evaluations. The main content area is titled 'Update Phase 1 Phase' and has tabs for Phase, Submission, Scoring, Leaderboard, and Result Detail. The 'Scoring' tab is active, showing the following fields:

- Score title***: Malignancy risk AUC. Description: The name that will be displayed for the scores column, for instance: Score (log-loss).
- Score jsonpath**: malignancy_risk_auc. Description: The jsonpath of the field in metrics.json that will be used for the overall scores on the results page. See <http://goessner.net/articles/JsonPath/> for syntax. For example: dice.mean.
- Score error jsonpath**: (empty). Description: The jsonpath for the field in metrics.json that contains the error of the score, eg: dice.std.
- Score default sort***: Descending. Description: The default sorting to use for the scores on the results page.
- Score decimal places***: 4. Description: The number of decimal places to display for the score.
- Extra results columns**: A code editor showing a JSON object:

```
[  
  {  
    "path": "nodule_type_accuracy",  
    "order": "desc",  
    "title": "Nodule Type Accuracy"  
  }  
]
```

. A red arrow points to the 'Code' button. Description: A JSON object that contains the extra columns from metrics.json that will be displayed on the results page.
- Scoring method choice***: Use the mean of the relative ranks of the score and extra result columns. Description: How should the rank of each result be calculated? A red arrow points to this dropdown.



[Info](#) [Forum](#) [Leaderboards](#) [Statistics](#)

[Join](#)

[Qualification](#) [Qualification \(last submission\)](#) [Final](#)

Qualification (last submission) Leaderboard

Search:

 [Additional metrics ▾](#) [Show all metrics](#)

#	1	User (Team)	1	Algorithm	1	Created	1	AUC Severity	1
1st		simon.j 		Balaitous 		9 April 2022		0.8044	
2nd		lorenjul  (Code 1055)		Chatschapuri-Algorithm		13 April 2022		0.7868	
3rd		titericz 		Giba-Algorithm		14 April 2022		0.7837	
4th		etro 		ETRO VUB 3		13 April 2022		0.7752	
5th		miriamelia  (uaux2)		Stoic2021 - COVID-19 lung ct scans - team Augsburg 		12 April 2022		0.7662	
6th		mayugmaniparambil (ha19000)		simple-baseline		14 April 2022		0.7656	
7th		conga  (Flying Bird)		STOIC-2022-0412		13 April 2022		0.7479	

We also have an API



Wiki – to create a site, add, and edit pages



User management – registration, teams, forums



Secure ways to host challenge data, and upload algorithms



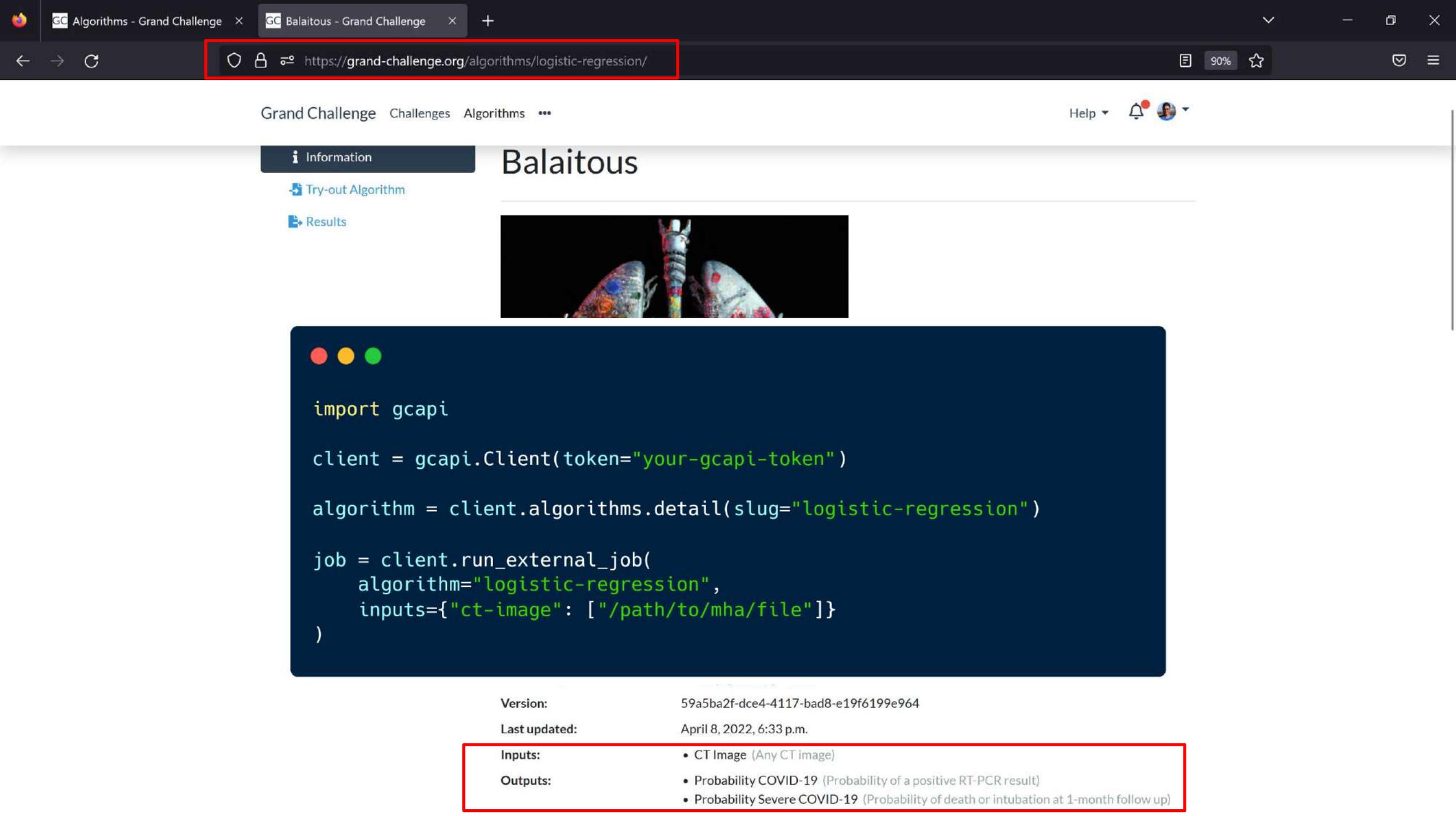
Automated evaluation



Automated leaderboard management



REST API



https://grand-challenge.org/algorithms/logistic-regression/

i Information

Balaitous

 [Try-out Algorithm](#)

 [Results](#)



```
import gcapi

client = gcapi.Client(token="your-gcapi-token")

algorithm = client.algorithms.detail(slug="logistic-regression")

job = client.run_external_job(
    algorithm="logistic-regression",
    inputs={"ct-image": ["/path/to/mha/file"]}
)
```

Version: 59a5ba2f-dce4-4117-bad8-e19f6199e964

Last updated: April 8, 2022, 6:33 p.m.

- Inputs:**
- CT Image (Any CT image)
- Outputs:**
- Probability COVID-19 (Probability of a positive RT-PCR result)
 - Probability Severe COVID-19 (Probability of death or intubation at 1-month follow up)

Results for Balaitous

Try-out Algorithm

Search:

Details	Created	Creator	Result	Comment	Visibility	Viewer	Probability COVID-19
	27 minutes ago	kiranvaidhya	FMYUCNKVKE3UG6... (Succeeded, with warnings)			Open Result in Viewer	0.5697163443428273
	3 weeks, 6 days ago	simon.j	study_1067.nl... (Succeeded, with warnings)			Open Result in Viewer	0.6936207362771412

Showing 1 to 2 of 2 entries

Previous 1 Next

Grand Challenge

- About
- Challenge Policy & Pricing
- Support & Documentation
- Statistics

Policies

- Terms of Service

Developers

- API Documentation
- API Schema
- Developer Documentation

Sponsors



Case Information

Display

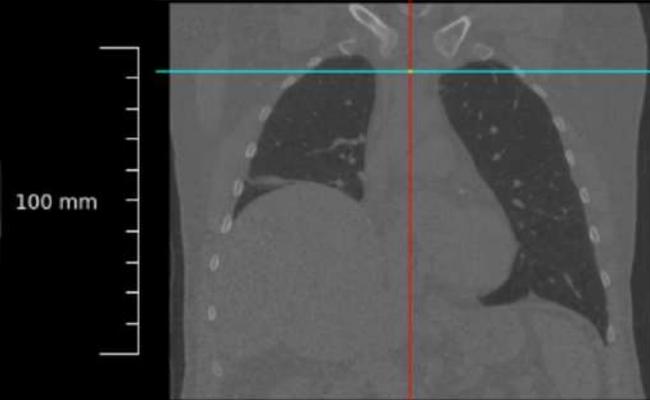
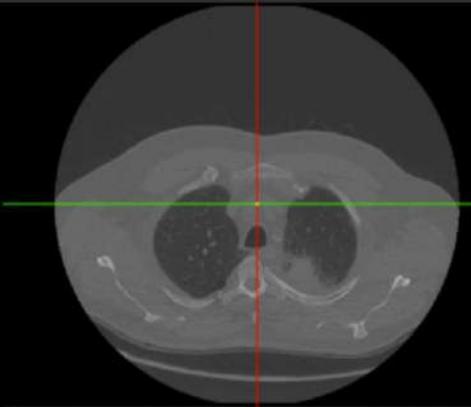
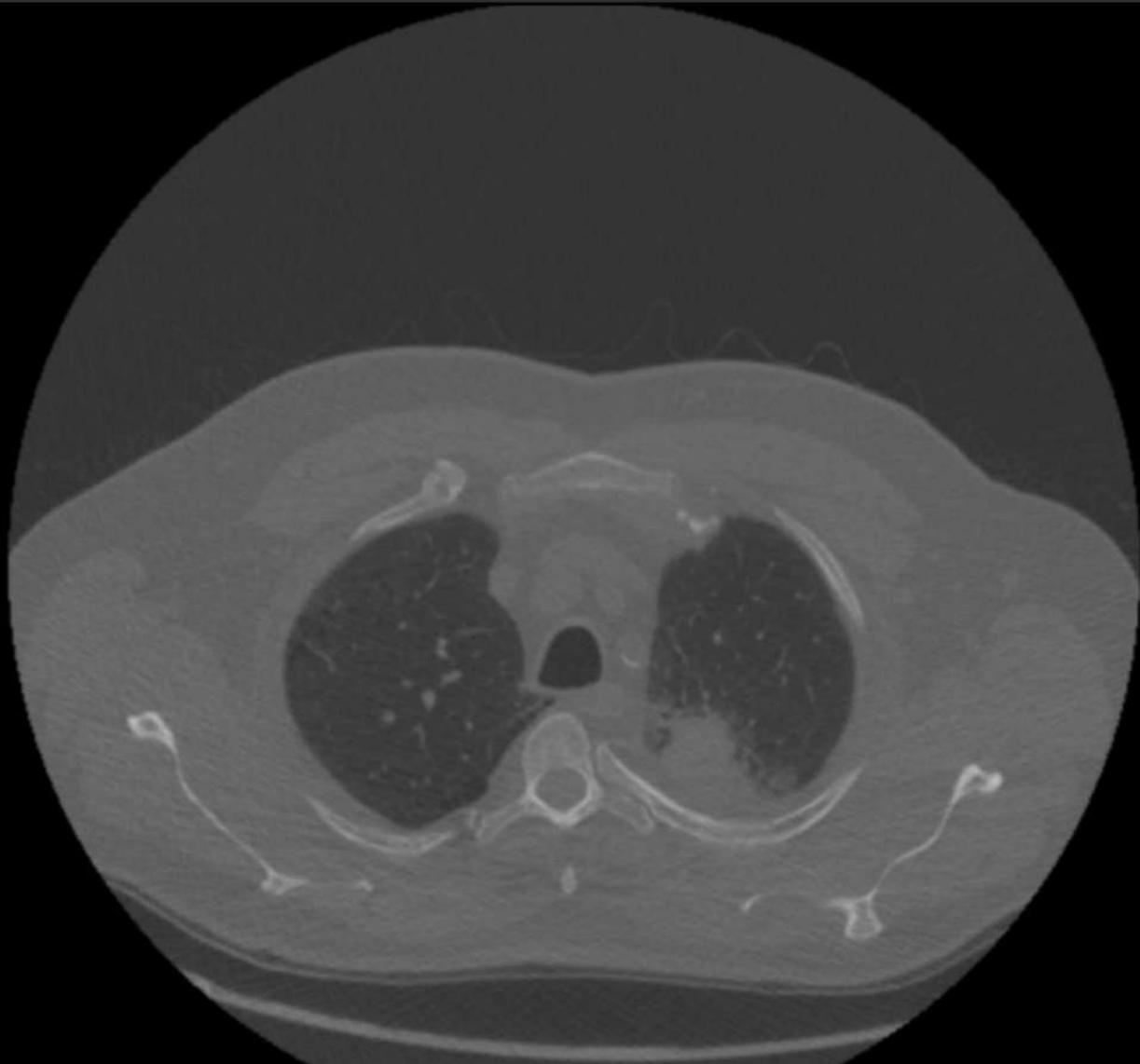
Average 0 mm

DICOM Window 512 5119

Axial Coronal Sagittal

Algorithm Results

Probability COVID-19 0.5697163443428273
Probability Severe COVID-19 0.12582313887893423



Contact support@grand-challenge.org



grand-challenge.org/documentation



Wiki – to create a site, add, and edit pages



User management – registration, teams, forums



Secure ways to host challenge data, and upload algorithms



Automated evaluation



Automated leaderboard management



REST API