

SIA Training

Training Released: July 10th 2025
Updated for SIA Version 0.10

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SIA Overview

What is SIA?

SIA (Satisfai Image Annotator)

SIA is developed by Dova Health Intelligence as a specialized web-based tool for annotating endoscopy videos, focusing on the sub-components of disease activity in IBD UC patients.

Objective

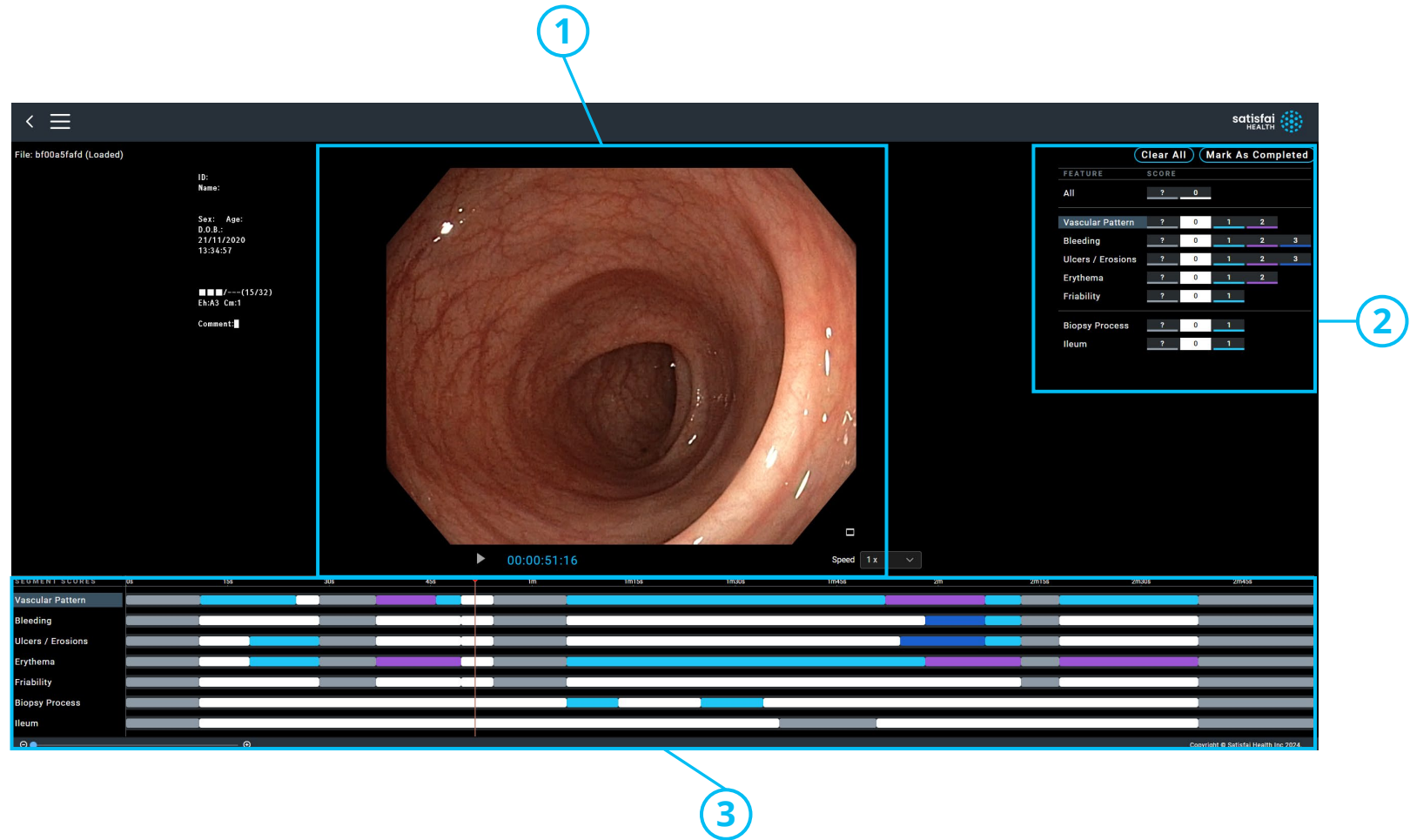


- Unlike standard reading procedures for assigning M/MES or UCEIS scores, the purpose with SIA is to gather annotations from experts that can be used to train AI algorithms for automating UC IBD sub-scoring
- This labeling process may involve some steps that are unfamiliar to central readers

Labelling User Interface Explained

Once you are in the Labelling interface, you are presented with an interactive web application featuring 3 main sections:

1. Video Display
2. Feature Label Scoring
3. Segment Scoring Timeline



Feature Label Scoring

- Top right section lists features for scoring (Vascular Pattern, Bleeding, Ulcers/Erosions, Friability, Erythema) with interactive, color-coded buttons.
- Procedure labels are also captured for "Biopsy Process" and "Ileum")
- Use the "All" feature to bulk assign "?" or "0" across all features for that section of the video. This would be for all healthy or all undefined
- Hover over score buttons for label score definitions (e.g., "Deep ulcer" for Ulcers/Erosions score of 3).
- For features with binary options (0 or 1) like Friability, 0 means "No" and 1 means "Yes".
- Use "?" for any feature with an undefined section.

Bulk assign "?" or "0" across all features for a section of the video

Hover over the score for scoring descriptions

Features to score

Procedure elements to label

Weighted scale to score each feature

FEATURE	SCORE
All	? 0
Vascular Pattern	? 0 1 2
Bleeding	? 0 1 2 3
Ulcers / Erosions	? 0 1 2 3
Erythema	? 0 1 2
Friability	? 0 1
Biopsy Process	? 0 1
Ileum	? 0 1

Score scale: 0 1 2 3

Labelling Process – Why?

Labelling Objective

- Training two AI models for UC disease activity scoring
 - Quality model to determine endoscopic videography suitable for clinical trials
 - Scoring model for M/MES and UCEIS
-

Balancing Cost and Accuracy

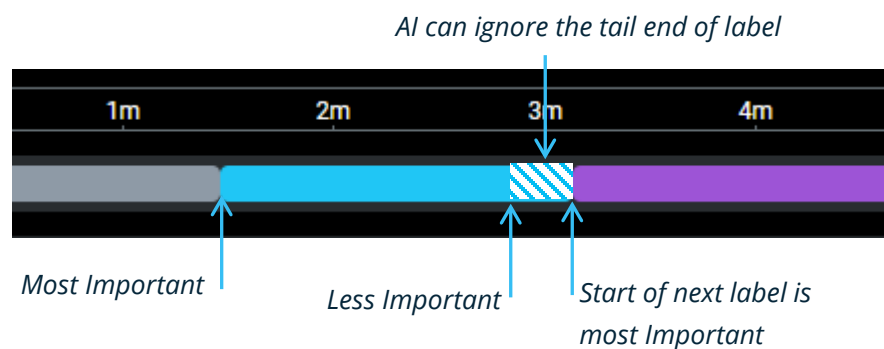
- Ideal AI model would be labelled frame by frame, but this would be cost prohibitive
 - Results from multiple labellers will be used to train AI
 - Interested in greater than 3 seconds of continuous sections
 - Small spurious events do not need to be labelled, although this is something difficult to determine without advance knowledge of what is coming. Using left and right arrow keys are most useful for this.
-

Subject to change

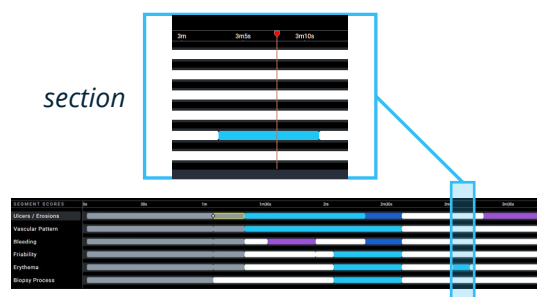
- As AI models are trained and results obtained, modified instructions may be required

Marking Transitions

- Transitions are changes in sub-scores, i.e. Vascular Pattern score has available states of (0, 1, or 2)
- Better to make an accurate call on something you see, rather than worrying about missing something
 - Marking start of transition is most important.
 - End of transitions can be less precise (AI can ignore tail end of a label)



Labelling Process



01

VIDEO SECTION

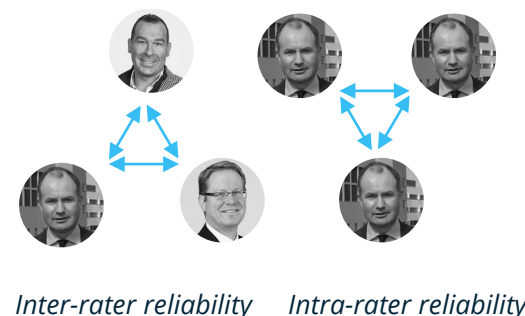
- The labelling process will revolve around defining a consistent video section.
- A video section is a number of frames in a video that share a common attribute.
- This may be non-evaluable frames, or frames with a common disease activity



02

TRANSITIONS

- The labeller will label each of the transitions.
- This will involve labelling each time one of the underlying labels has changed.
- This could be a label from non-evaluable to evaluable, or when a sub-score component changed
- The transitions should be captured as timepoints, not as frames, to make sure labels are maintained through compression.



03

INTER- & INTRA-RATER RELIABILITY

- For a small subset of all the data, the same video will be given to up to three different reviewers to determine the inter-rater reliability.
- After a washout period the same subset of videos will also be given back to the same labeller to determine the intra-rater reliability.

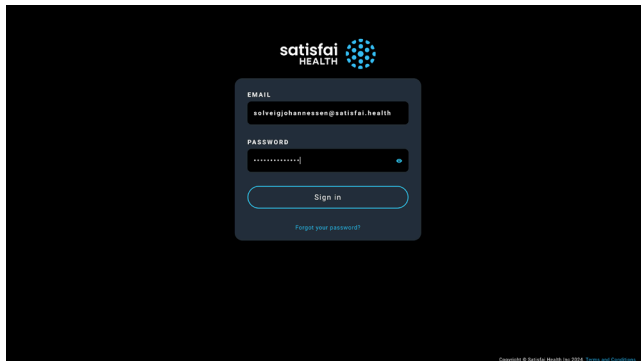
04

DATA TRANCHES

- Labellers will be given tranches of data to label. Once a tranche of data is complete, performance metrics will be calculated before an additional tranche is allocated to the reader.
- This process will repeat until all the data is labelled.

Labelling Process

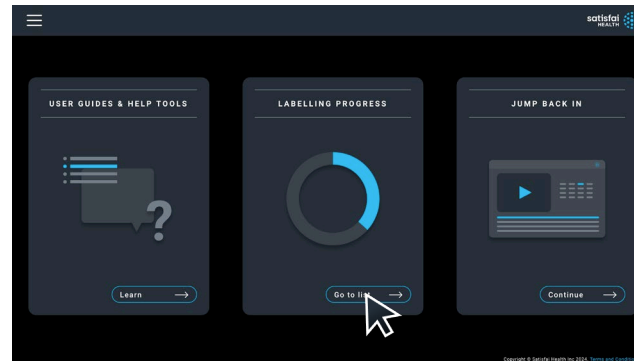
Getting started with SIA



01

Log in to SIA using your provided credentials at <https://sia.dovahealth.tools>

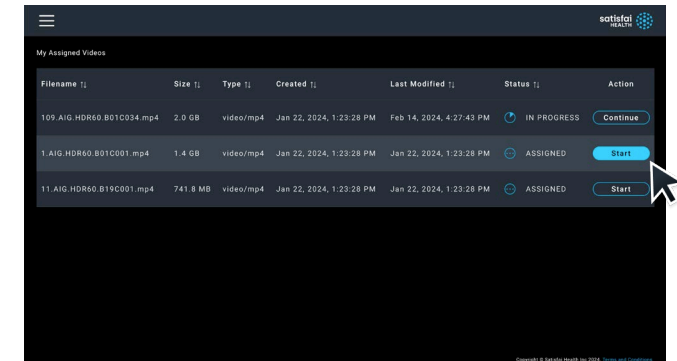
- You will receive your credentials via e-mail.
- Please check your "Junk" folder
- You'll be prompted to create a password



02

Navigate to the "Labelling Progress" section by clicking on "Go To List."

- If you have already started labelling the "Jump Back In" card will display and you can continue labelling where you left off



03

In the "Labelling Progress" page, a list of videos assigned to you will be displayed.

- Begin labelling by selecting a video and clicking "Start" to enter the labelling interface.

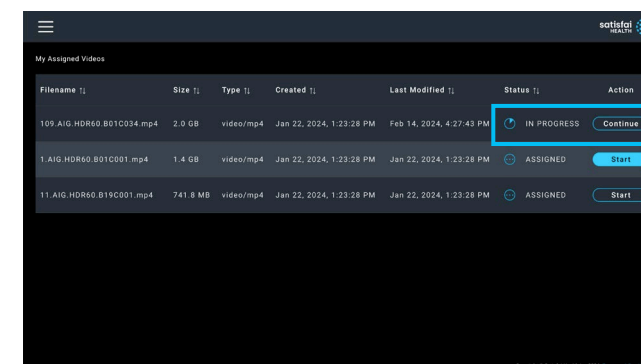
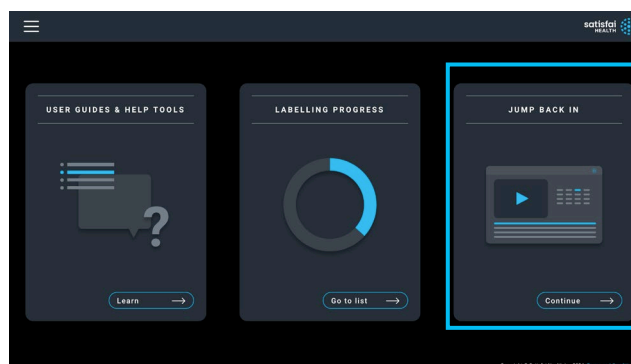
Labelling Guidelines and Process

Starting New Videos

- Initially, the entire video is assumed to be undefined for all features. Begin by marking the start of the first visible state for each feature .
- If the start of the video is an out-of-body segment, then you should wait until an in-body segment before transitioning from “?” to a new state for each feature.

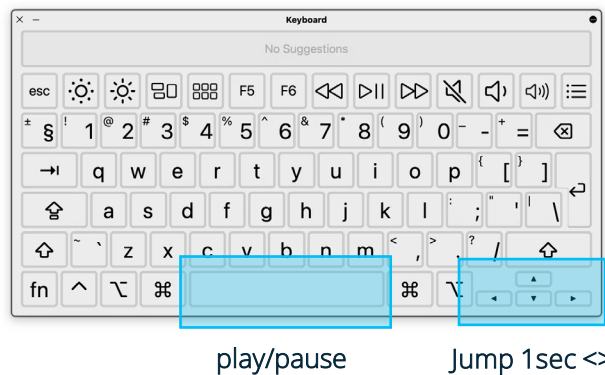
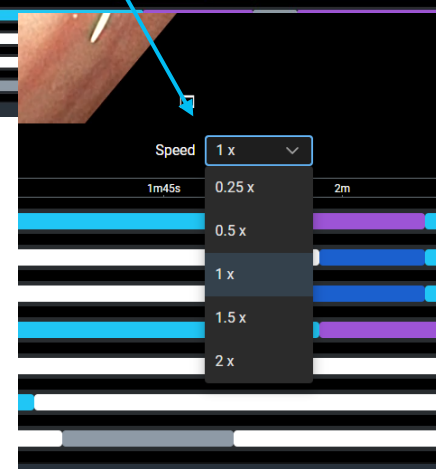
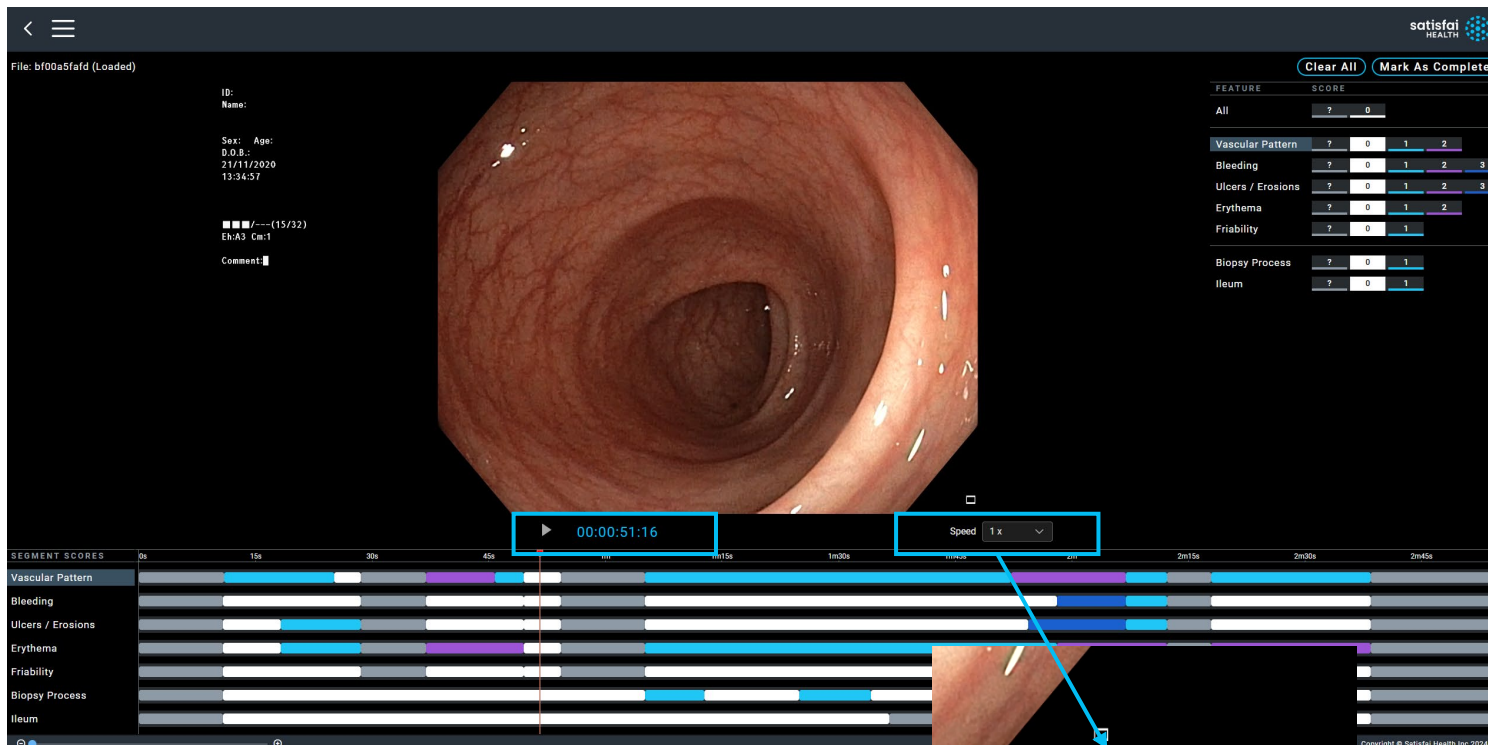
Continuing a Started Video

- All labeling progress for a started video is **automatically saved**, so there is no need to manually save your progress
- If you are not able to complete labeling a video in one sitting, you can always return to the same video to continue with labeling. When you sign back into SIA and check your assigned videos, you can see the status for the video will have changed from “Assigned” to “In-Progress”. Click on “Continue” to return to the video and continue labeling.



Video Display

- Beneath the video display, there are:
 - The play button and a timestamp
 - The playback speed selector
- To navigate the video:
 - Use Space bar to play and pause
 - Use Arrow keys will jump in 1 second intervals back or forward in the video playback



TIP: Use keyboard shortcuts for fastest labelling, mouse is possible but not recommended.

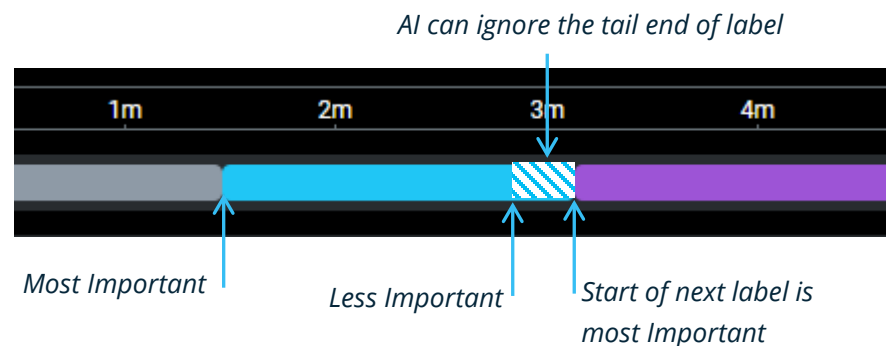
Marking Transitions – Example workflow

Navigating and Viewing

1. Use Right Arrow to jump in 1 second intervals or Play the video (using space bar)
 - Fast Jumping: Drag the thumb or use “shift” and right arrow to jump ahead 5 seconds to get overall impression of the video, ahead of scoring (Optional)

Pause and score

2. When a change in sub-score is observed, pause video (using space bar)
 - Do not jump back to exact transition
3. Use Up/Down Arrow and Number keys to score (see shortcut guide)
4. Place scores as keyframe markers for "transitions" between states



Labelling Guidelines and Process

Undefined '?'

- If an individual feature is out of body, blurry, blacked out, etc, choose undefined (?) for that feature.
 - This tells the AI Model to ignore that feature for that section in the video during training.
 - If you cannot define any features because the image is out of body, blurry, blacked out, etc., you can choose the “All” dash.
 - This will mark all features as undefined simultaneously.
-

Collision Detection

- No keyframes can ever be “on top” of one another
 - Any keyframe within 1/2 second of another will be replaced with the one you are placing
 - This allows you to change your mind, without having to delete the previous keyframe
-

Labelling Guidelines and Process

- Resetting progress on a video**
- If you feel the need to completely “reset” a video for whatever reason, you can click on the “Clear all” button on the top right of the screen to reset all labels for the video.
 - If you accidentally clicked this button, don’t worry as you will also need to “Confirm” the reset. Be careful however as confirming to reset will make all labelling progress on a video lost and unrecoverable.

- Completing a Finished Video**
- Once you have completed annotating a video such that all intervals for all features are marked for a video from start to finish (including insertion & withdrawal), you can click on the “Mark as Completed” button at the top right of the screen.

- Enter Global MES Score
- Mark withdrawal or insertion phase absent
- Mark Suspected Crohn’s
- Mark PII present (Personally Identifiable Information)
- Enter active labelling time (in minutes)
- Add comments, minimal, when necessary

Mark video as completed? ✕

Global MES Score

Select a Global MES Score ▼

Insertion Phase Absent

Withdrawal Phase Absent

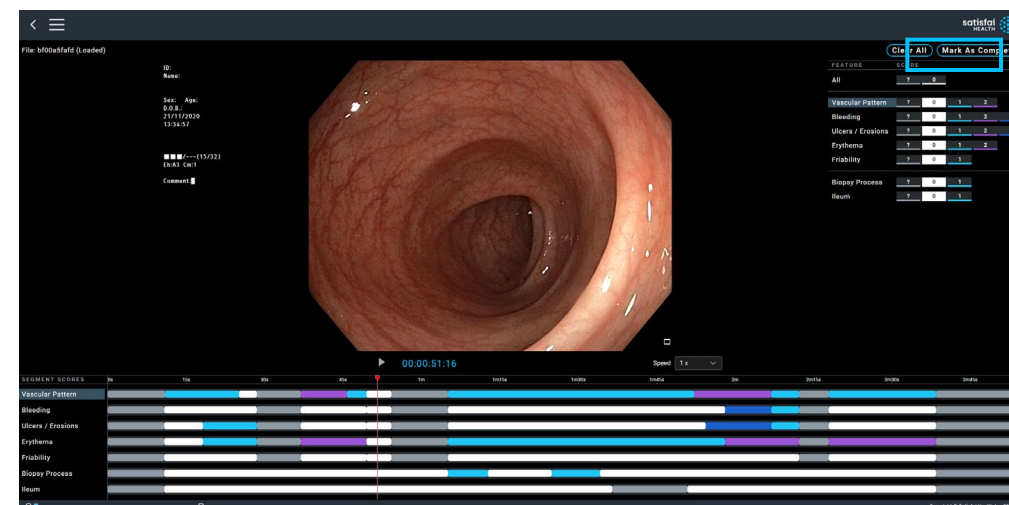
Suspected Crohn's

Personally Identifiable Information (PII) Present

Time to Label (minutes)

Comments

Cancel
Save and Close

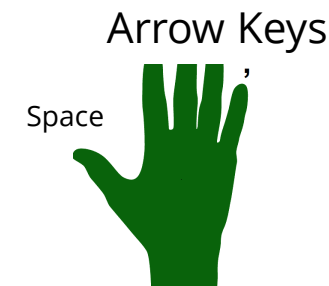
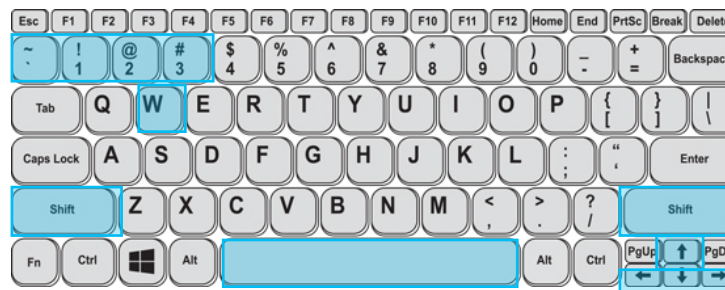
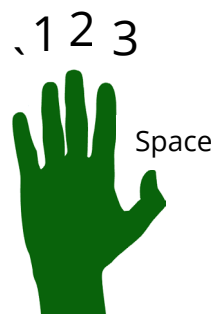


Shortcut Quick Guide

Shortcut Quick Guide

Keyboard Key(s)	Action
Video Playback	
Spacebar	<i>Plays/pauses video</i>
Left and Right Arrow	<i>Moves thumb/video by 1 (one) second</i>
Shift plus Left Arrow or Right Arrow	<i>Moves thumb/video by 5 (five) seconds</i>
Scoring	
Up Arrow and Down Arrow	<i>Moves between features (sub-scores)</i>
w, ` , 1,2,3	<i>Assigns scores:</i> "`" = 0 or "0" 1,2,3 numbers as defined "w" = Undefined (could also use "?")
"Shift" and "w" or "shift" and "?"	<i>All Undefined (Using "w" is more ergonomic than "?")</i>
"Shift" and "`" or "Shift" and "0"	<i>All Normal (Using "`" is more ergonomic than "0")</i>

Note: this based on US/Canada Keyboard, for other keyboard the exact symbol or keys may differ, please discuss options with Dova

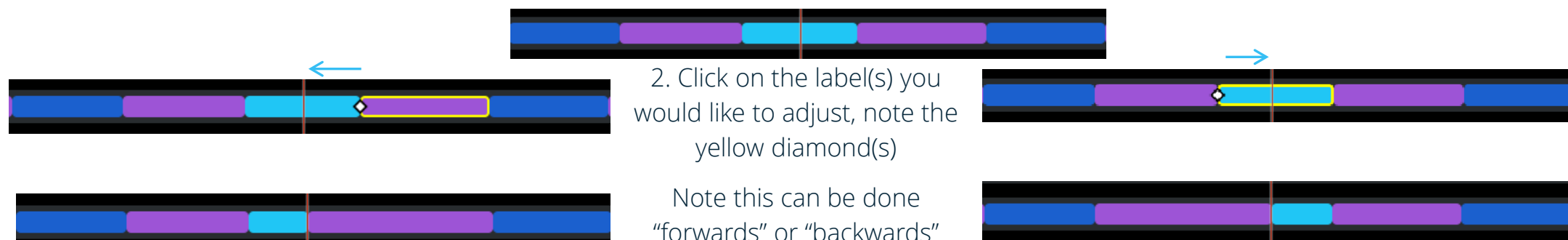


Advanced

Keyboard Key(s)	Action
Ctrl+Z (Cmd+Z for Mac)	Undo, Removes the last label, can be done up to 30 times
Ctrl+y (Shift+CMD+Z for Mac)	Re-do, Re-inserts the last label
Delete/Backspace	Removes highlighted keyframe (diamond), thereby cancelling block to next keyframe
S (Snap)	Moves all highlighted keyframes (diamonds) to current thumb location
Alt plus Left Arrow or Right Arrow	Moves thumb/video by 1 (one) frame

How to use Snap

1. Place the "thumb" in the position you want a label



3. Press the "S" key

Detailed Labelling Instructions

Feature Based

- **Evaluable** sections will be labelled based on their underlying pathophysiology
- Default tag state is undefined

Category	#	Descriptor	Definition
Erythema	?	Undefined	Status is indeterminate
	0	Normal	Normal pink colour, smooth, glistening mucosa
	1	Erythema	Increase in colour of mucosa, mucosa looks light red
	2	Marked erythema	Marked increase in colour of mucosa, mucosa looks dark red
Vascular Pattern	?	Undefined	Status is indeterminate
	0	Normal	Branching blood vessels (arborization of mucosal vessels) are clearly defined and visible through the mucosa
	1	Decreased/Patchy obliteration	Decreased vascular pattern or patchy loss of capillary margins
	2	Absent/Obliterated	Absent vascular pattern or complete loss of capillary margins
Bleeding	?	Undefined	Status is indeterminate
	0	None	No blood present
	1	Mucosal	Some spots or streaks of coagulated blood on the surface of the mucosa ahead of the scope that can be washed away
	2	Luminal mild	Some free liquid blood in the lumen
	3	Luminal moderate or severe (Spontaneous)	Frank blood in the lumen ahead of the endoscope or visibly oozing from the mucosa after washing intraluminal blood, or visibly oozing from a haemorrhagic mucosa
Ulcers and Erosions	?	Undefined	Status is indeterminate
	0	None	No Erosions present
	1	Erosions	A tiny ($\leq 5\text{mm}$) ulcerative defect of the mucosa of white or yellow colour with flat edges
	2	Superficial ulcer	Superficial ulcerations appear as larger ($> 5\text{mm}$) defects of the mucosa, which are discrete fibrin-covered ulcers in comparison with erosions.
	3	Deep ulcer	Deep ulcers can appear as deeper, excavated defects of the mucosa with slightly raised edges.
Friability	?	Undefined	Status is indeterminate
	0	Absent	No Observed Friability
	1	Present	Bleeding associated with the passage of the endoscope or light touch. Score friability on withdrawal to differentiate from spontaneous bleeding. It may also be possible to score friability in some cases during the insertion phase.

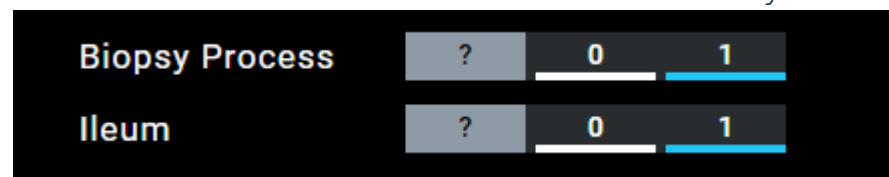
Procedure Labelling

The “Biopsy Process” or Tool manipulation

- The objective with this feature is to mark the start and end duration of a full biopsy process
- This whole process includes the endoscopist initially taking out a tool, performing a biopsy with the tool, visible blood from the biopsy still in view
- Procedures could be biopsies, polypectomy (snare polypectomy and polyp fulguration), ect.
- While tool manipulations may not have any impact on human central readers, AI algorithms can often learn to become biased to specific features which are not associated with scoring such as presence of a tool or blood from a biopsy process (i.e. confusing it with Friability)
- If it is clear a biopsy is being performed or was recently performed (in a past endoscopy) this can be labelled as "1" or "Yes" - this may include biopsy related bleeding
- If it is clear a biopsy was not recently performed label as "0" or "No"
- If possible, label other visible scores during biopsy process (i.e. Vascular pattern)

Ileum

- The ileum should be marked as “1” or “In Ileum” anytime the procedure leaves the colon and enters the ileum
 - While in the Ileum, no other scoring is required
- The ileum should be marked as "0" or "Out of Ileum" any other time.



Unclear

- If uncertain, either Biopsy Process or Ileum it can be marked as "?" or "undefined".

Procedure Labelling – “All”

The screenshot displays the Satisfai Health software interface for video analysis. The central video shows a colonoscopy view. On the left, patient information is visible: ID, Name, Sex, Age, D.O.B., and a timestamp. On the right, a 'FEATURE SCORE' table is shown with buttons for 'Clear All' and 'Mark As Completed'. The table lists various features with their current scores. The 'Biopsy Process' and 'Ileum' rows are highlighted with a blue border.

FEATURE	SCORE
All	7 0
Vascular Pattern	7 0 1 2
Bleeding	7 0 1 2 3
Ulcers / Erosions	7 0 1 2 3
Erythema	7 0 1 2
Friability	7 0 1
Biopsy Process	7 0 1
Ileum	7 0 1

Below the video, a 'SEGMENT SCORES' timeline is visible, showing a progress bar from 0s to 2m45s. The 'Biopsy Process' and 'Ileum' labels are also highlighted in the segment scores section.

- “All” Label does not change the label for “Biopsy Process” and Ileum”
- These labels will need to be set independently

Other Procedure Labelling

Chromoendoscopy

- Any Chromoendoscopy observed in the video should be marked as All Undefined (“All” (?), rather than applying a '?' for each feature individually.)
 - Biopsy Process and Ileum will require the '?' to be added separately.
-

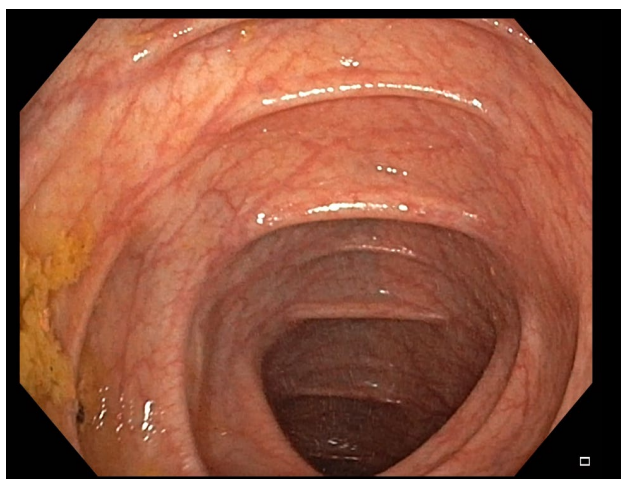
Rectal Retroflexion

- UC disease activity should still be scored, as long as the endoscope does not completely obstruct the view
- The AI should get used to seeing the scope

50% of the frame

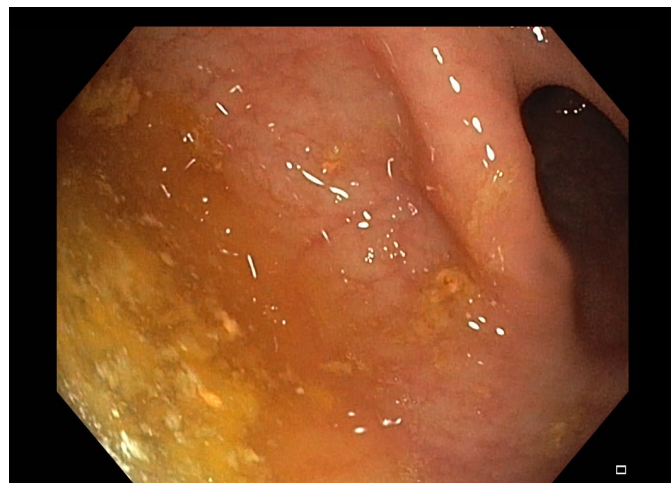
- If $> 50\%$ of the frame is clear, attempt to score
- If $\leq 50\%$ of the frame is clear, mark as undefined
- Based on your clinical judgement, but okay to err on undefined

Mostly Clear



- Score what you can in the frame
- When in doubt, mark any specific sub-score as undefined where needed

50/50



- Apply clinical judgement, erring on the side of undefined

Mostly Obstructed



- Mark as all undefined
- If you are confident in a single sub-score (such as vascular pattern) you can score this, but not required

Labelling Guidelines and Process

Post-inflammatory polyps (PIPs) or 'pseudopolyps'

- Do not score. They typically signify past instances of severe inflammation rather than indicating active disease.
 - Disregard any erosions or ulcerations present on the apex of a polyp
 - Ulceration on the surface of pseudopolyps should not be scored as ulceration unless it extends onto the mucosa
-

Scarring

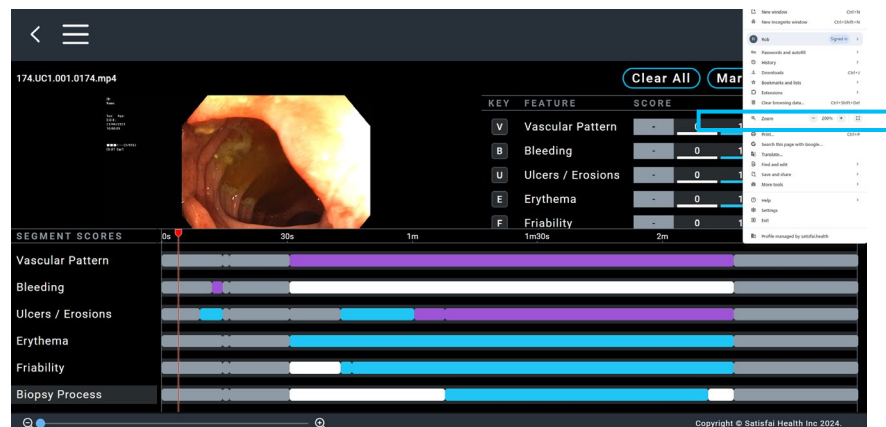
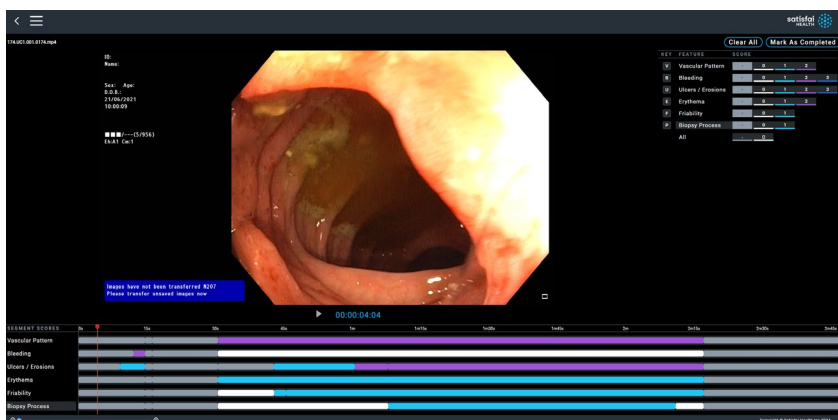
- If the vascular pattern can be assessed between scarring, score if possible
 - If the scarring is too severe, than vascular patten should be marked as "undefined"
 - Bleeding, ulceration and friability are unaffected and should be scored normally.
-

Troubleshooting & Feedback

Configuring SIA

Ensure Video is "Full Screen"

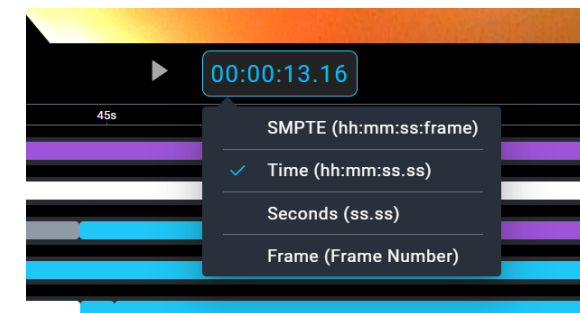
If the video looks obstructed, adjust the zoom settings on your browser.



Only Chrome is supported at this time



Time display on video can be adjusted



Download Speeds

Recommend internet speed of 500Mbps.

Expected download times for file size from 2 - 6 GB:

50 Mb/s => 7 - 20 mins

100 Mb/s => 3 - 10 mins

Check internet

330 Mb/s => 1 - 3 min

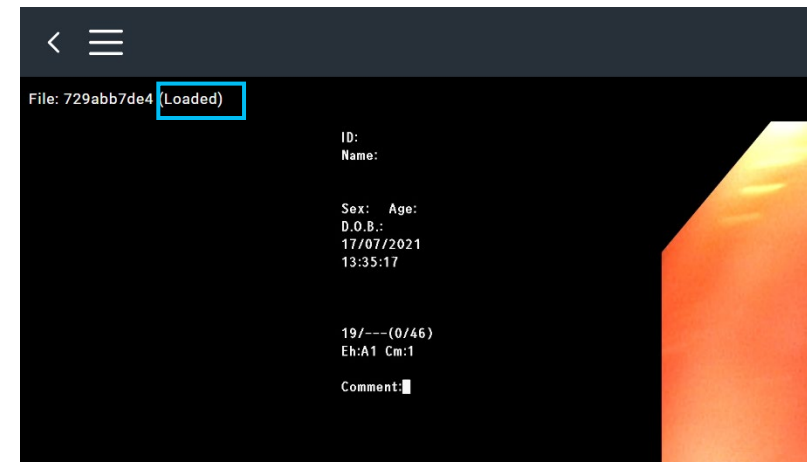
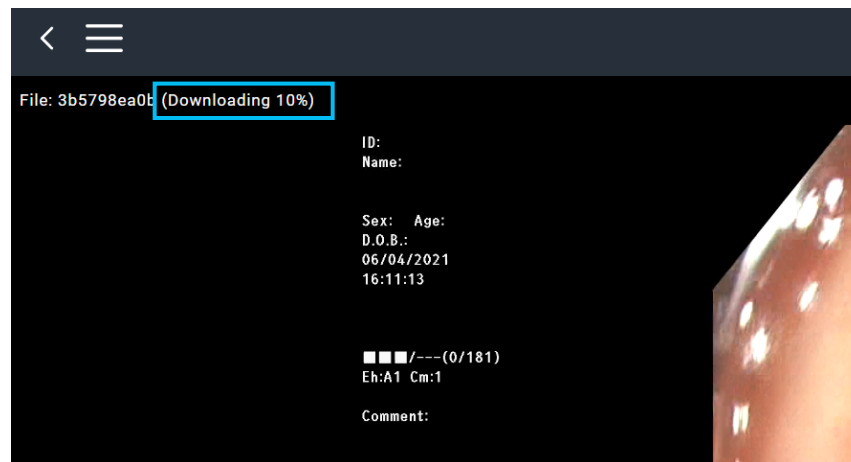
speed at fast.com.

500 Mb/s => 40 s - 2 min

It is possible to open SIA before you want to start labelling to allow the video to download in Advance.



Any loss of internet will result in a warning, as the tool needs continuous connection.

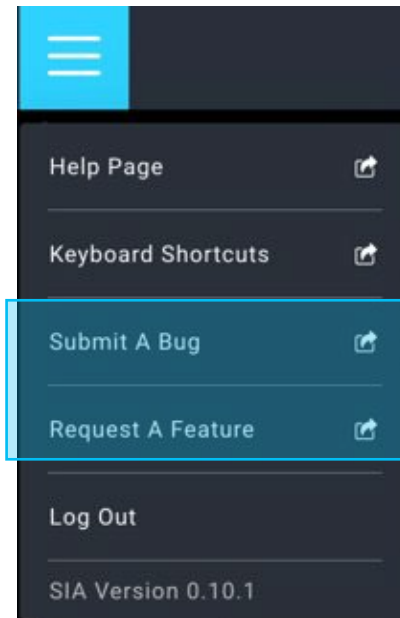


Troubleshooting, Help & Feedback

Can schedule one on one calls to get started

engineering@dovahealth.ca

**With any issues,
please include
screenshots where
possible.**





Happy Labelling!

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