



## Call for Data

# MICCAI Endoscopic Vision Challenge

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Minimally invasive surgery using cameras to observe the internal anatomy is the preferred approach to many surgical procedures. As a result, endoscopic image processing and surgical vision are evolving as techniques needed to facilitate computer assisted interventions (CAI). Algorithms that have been reported for endoscopic images and video include 3D surface reconstruction, salient feature motion tracking, instrument detection or surgical workflow recognition. However, what is missing so far are common datasets for consistent evaluation and benchmarking of algorithms against each other. In computer vision outside surgical applications, such strategies are common place but this has not yet been achieved for endoscopic data. As an endoscopic vision CAI challenge at MICCAI, our aim is to provide a formal framework for evaluating the current state of the art, gather researchers in the field and provide high quality data with protocols for validating endoscopic vision algorithms.

We invite the community to be part of organizing this challenge (<https://endovis.grand-challenge.org/>) by contributing data for a specific sub-challenge in the field of endoscopic image processing and surgical vision (e.g. 3D surface reconstruction, tissue classification, feature or instrument tracking). All data used in the challenge will be made publically available and should comply with the quality guidelines described at [http://grand-challenge.org/Challenges\\_Checklist/](http://grand-challenge.org/Challenges_Checklist/). The provider of the sub-challenge data will coordinate a corresponding journal paper summarizing the results, contributions and the data itself.

If you are interested in contributing your data and proposing a sub-challenge, please fill out the checklist below and send it to [endoscopy-challenge@iar.kit.edu](mailto:endoscopy-challenge@iar.kit.edu) by **March 24<sup>th</sup>**. Submitted forms will be reviewed by the challenge chairs. Notification of acceptance will be provided by **March 30<sup>th</sup>**.

## **Title Sub-challenge**

## **Organizing Team**

Please provide names and affiliations of the organizing team.

## **Contact Person**

## **Sub-challenge topic**

*What specific task is supposed to be addressed in the sub-challenge (e.g. 3D surface reconstruction, tissue classification, feature or instrument tracking). Challenges should ideally address an important open problem for which some solutions are available, so that the time is right for a fair and direct comparison of different approaches.*

Please describe the endoscopic vision task to be evaluated in this challenge and explain the clinical procedure(s) the provided data originates from.

## **Data Quality**

*It is important to provide enough data, and this data should contain enough variability to be representative for the problem. In general, it is preferred to have data from different devices, obtained with different protocols or workflows as used in clinical practice worldwide, and from different institutions or populations. A typical limitation of published papers is that a proposed algorithm is evaluated on data from only a single site.*

## **Training Data:**

*Prospective participants to challenges often appreciate the availability of ample training data. Provide this data if possible and if appropriate to the task. Of course, training data*

*should be representative of testing data. Please indicate in the rules of your challenge how participants should use this training data, i.e. are they allowed their own training data as well or not, or are there different tracks depending on what training data was used.*

Please provide a detailed description of the training data set as well as a link to representative sample training images.

***Test Data:***

*Make sure you properly separate training and test data. It is preferred to include some test data from protocols/scanners/institutions that are not represented in the training set.*

Please provide a detailed description of the test data set as well as a link to representative sample test images.

**Reference Standard and Evaluation Metrics**

*The methods of defining the reference standard (“gold standard”) and of evaluating algorithm results must be clearly defined and generally agreeable to the academic community. The challenge is unlikely to attract interest from serious contenders if these methods are poorly considered or open to question. For a paper describing procedures to define reference standards see*

[http://www.hal.inserm.fr/file/index/docid/185431/filename/Jannin\\_Manuscript-revised3IJCAR2007.pdf](http://www.hal.inserm.fr/file/index/docid/185431/filename/Jannin_Manuscript-revised3IJCAR2007.pdf)

Please provide a detailed description of the reference used to assess the quality of the results as well as the evaluation metrics.

### **Participants**

*Substantial prerequisite for a successful challenge is a sufficient number of participants.*

Please provide a list of potential participants and indicate if they have already confirmed their willingness to contribute

### **Open Data**

*All data used in the endoscopic vision challenge will be made publically available.*

Please confirm that you are willing to make the data you contribute publically available.

### **Publication**

*The results of each specific sub-challenge should be submitted as a journal publication. The providers of the data will coordinate the submission and coordinate the paper preparation.*

Please confirm that you are willing to coordinate a publication of the sub-challenge results.