

Imaris Reader

The IMS file format is designed to allow fast visualisation and processing of very large 3D/4D images. It is used by the Imaris software from Oxford Instruments. The Imaris Reader library provides 5 main methods to read image data and parameters stored in IMS files.

1) ReadMetadata

This method can be called to read the following information from an IMS file:

- Image size per resolution: the size of the image at each resolution level (sizeX, sizeY, sizeZ, number of channels, number of timepoints);
- Block size per resolution: the size of the image blocks composing the full image at each resolution level (sizeX, sizeY, sizeZ, number of channels, number of timepoints);
- Image extents: the minimum and maximum values for the x, y and z coordinates of the image;
- Time information for each time point: Julian day and time (in nanoseconds) of the recordings;
- Colour information for each channel: colour mode (base colour or colour table) and corresponding base colour or colours in the colour table (red, green, blue and alpha values), minimum and maximum colour range, opacity and gamma correction;
- Compression algorithm: 0 for no compression, 1-9 for GZIP compression with compression level 1-9, 11-19 for byte shuffling plus GZIP compression with compression level 1-9, 21 for LZ4 compression, 31 for byte shuffling plus LZ4 compression.

2) ReadData

This method can be used to read a block of data of any size from the image dataset by specifying the 5D starting and end coordinates of the block (x, y, z, channel and time point).

3) ReadParameters

This method can be called to read all parameters contained in the DataSetInfo group. This group contains multiple sections, each with multiple attributes. As an example, ReadParameters can be used to obtain the value of the NumericalAperture attribute in the Image section (if it exists).

4) ReadHistogram

ReadHistogram can be called with a specified time point, channel index and resolution level to read the corresponding Histogram dataset, which contains an histogram of voxel values. It returns a struct containing the values of all bins of the histogram and its minimum and maximum range.

5) ReadThumbnail

Lastly, ReadThumbnail can be used to read the thumbnail Data of the image, as well as the x and y sizes of the thumbnail.