Head Circumference Embedded

Generated by Doxygen 1.9.7

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Chapter 1

machine learnig source code

classes here are based on `dlib`

Chapter 2

Source Files

These are the source files used by `Makefile`.

Chapter 3

Namespace Index

3.1 Namespace List

Here is a list of all documented namespaces with brief descriptions:

ActiveGeomtericShape
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Chapter 4

Class Index

4.1 Class List

Here are the classes, structs, unions and interfaces with brief descriptions:

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Chapter 5

File Index

5.1 File List

Here is a list of all documented files with brief descriptions:

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Chapter 6

Namespace Documentation

6.1 ActiveGeomtericShape Namespace Reference

Classes to fit predefined shapes to data.

Classes

- class Ellipse

  To find and fit an ellipse in 2D image data.

6.1.1 Detailed Description

Classes to fit predefined shapes to data.

Based on the article by Wang et al. (2012)

Chapter 7

Class Documentation

7.1 ActiveGeomtericShape::Ellipse Class Reference

To find and fit an ellipse in 2D image data.

```
#include <ellipse.h>
```

Classes

- struct Image

Public Member Functions

- void **calculate_force_field** (Ellipse::Image i)

7.1.1 Detailed Description

To find and fit an ellipse in 2D image data.

Based on Wang et al. (2012)

The documentation for this class was generated from the following files:

- src/active_geometric_shape/ellipse.h
- src/active_geometric_shape/ellipse.cpp

7.2 ActiveGeomtericShape::Ellipse::Image Struct Reference

Public Attributes

- size_t **width**
- size_t **height**
- std::vector< double > **x**

The documentation for this struct was generated from the following file:

- src/active_geometric_shape/ellipse.h

7.3 MachineLearning::Image Class Reference

Public Member Functions

- **Image** (std::string ultrasound_folder)
- void **load_data** (std::string filename)
- std::filesystem::path **safe_append** (std::filesystem::path original, std::string addition)
- void **set_test_status** (bool test_status)

The documentation for this class was generated from the following files:

- src/machine_learning/image.h
- src/machine_learning/image.cpp

7.4 MachineLearning::Logger Class Reference

Static Public Member Functions

- static void **display_error_message** (std::string error)
- static void **display_info_message** (std::string info)
- static void **display_test_message** ()
- static void **set_levels** ()

The documentation for this class was generated from the following files:

- src/machine_learning/logger.h
- src/machine_learning/logger.cpp

7.5 MachineLearning::Unet Class Reference

The documentation for this class was generated from the following files:

- src/machine_learning/unet.h
- src/machine_learning/unet.cpp

Chapter 8

File Documentation

8.1 ellipse.h

```cpp
//Copyright (2023) Dr. David A. Magezi
#ifndef DEF_AGS_ELLIPSE
#define DEF_AGS_ELLIPSE

#include <vector>
namespace ActiveGeomtericShape{
class Ellipse{
public:
    struct Image{
        size_t width;
        size_t height;
        std::vector<double> x;
    };
    void calculate_force_field(Ellipse::Image i);


private:
    Ellipse::Image force_field_;
};
}//namespace ActiveGeometricShape
#endif //DEF_AGS_ELLIPSE

```

8.2 image.h

```cpp
//Copyright(2023) Dr. David A. Magezi

#ifndef DEF_ML_IMAGE
#define DEF_ML_IMAGE

#include <filesystem>
#include <string>
#include <vector>


namespace MachineLearning{
class Image{
public:
    Image(std::string ultrasound_folder);
    ~Image();

    void load_data(std::string filename);
    std::filesystem::path safe_append(std::filesystem::path original,std::string addition);
    void set_test_status(bool test_status);

private:
    std::filesystem::path get_mask_path();

    bool test_status_;
    std::filesystem::path current_subfolder_, image_path_;
    inline static const std::string image_extension_ = "png";
    inline static const std::string mask_suffix_ = "_Annotation";
    inline static const std::string mask_tail_ = mask_suffix_ + "." + image_extension_;
    inline static const std::string test_subfolder_ = "test_set/";
    inline static const std::string training_subfolder_ = "training_set/";
    std::filesystem::path ultrasound_folder_;
};
}//namespace MachineLearning

#endif //DEF_ML_IMAGE
```

8.3 logger.h

```
//Copyright (2023) Dr. David A. Magezi

#ifndef DEF_ML_LOGGER
#define DEF_ML_LOGGER

#include <string>

#include <dlib/logger.h>

namespace MachineLearning{
class Logger{
public:
    static void display_error_message(std::string error);
    static void display_info_message(std::string info);
    static void display_test_message();
    static void set_levels();

private:
    static dlib::logger error_log_;
    static dlib::logger info_log_;
    static dlib::logger test_log_;
};
}//namespace MachineLearning

#endif //DEF_ML_LOGGER
```

8.4 unet.h

```
//Copyright 2023 David A. Magezi
//Implementation of U-Net architecture by Ronneberger et al.

#ifndef DEF_ML_UNET
#define DEF_ML_UNET

namespace MachineLearning{
class Unet{
public:
    Unet();
    ~Unet();
};
}//namespace MachineLearning

#endif //DEF_ML_UNET
```

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