**基于人脸表情识别的音乐自动生成大创项目**

**——Python FaceRecongition Part**

**Problem 1：项目中用java来实现客户端和服务端的交互，需要用java来调用python代码，并与python程序进行交互**

**Answer1：**

**Jython**

Python is an easy to learn, powerful programming language. It has efficient high-level data structures and a simple but effective approach to object-oriented programming. Python’s elegant syntax and dynamic typing, together with its interpreted nature, make it an ideal language for scripting and rapid application development in many areas on most platforms.

Jython is an implementation of Python for the JVM. Jython takes the Python programming language syntax and enables it to run on the Java platform.

1-安装开发环境：

Jar Download：<https://www.jython.org/downloads.html>

Or：

<https://wiki.python.org/jython/InstallationInstructions>

**The standalone option does no caching and so avoids the startup overhead (most likely at the cost of some speed in calling Java classes, but I have not profiled it)**

**You can try it out by running the installer:**

$ java -jar jython\_installer-2.7.1.jar

2-函数调用

**PythonInterpreter** interpreter = **new** **PythonInterpreter**();

interpreter.execfile("/home/arron/PycharmProjects/first/1.py");

**PyFunction** func\_third= (**PyFunction**)interpreter.get("third",**PyFunction**.class);

**PyObject** pyobj = func\_third.\_\_call\_\_(**new** **PyInteger**(4), **new** **PyInteger**(2));

**System**.out.println(pyobj);

解析：

**PythonInterpreter**

**Construction Function：**

|  |  |
| --- | --- |
| **Constructor Summary** | |
| [**PythonInterpreter**](https://www.jython.org/javadoc/org/python/util/PythonInterpreter.html#PythonInterpreter())()            Creates a new interpreter with an empty local namespace. |  |
| [**PythonInterpreter**](https://www.jython.org/javadoc/org/python/util/PythonInterpreter.html#PythonInterpreter(org.python.core.PyObject))([PyObject](https://www.jython.org/javadoc/org/python/core/PyObject.html) dict)            Creates a new interpreter with a specified local namespace. |  |
| [**PythonInterpreter**](https://www.jython.org/javadoc/org/python/util/PythonInterpreter.html#PythonInterpreter(org.python.core.PyObject,%20org.python.core.PySystemState))([PyObject](https://www.jython.org/javadoc/org/python/core/PyObject.html) dict, [PySystemState](https://www.jython.org/javadoc/org/python/core/PySystemState.html) systemState) |  |

**Methods：**

编译运行python文件：

|  |  |
| --- | --- |
| void | [**execfile**](https://www.jython.org/javadoc/org/python/util/PythonInterpreter.html#execfile(java.io.InputStream))([InputStream](http://java.sun.com/j2se/1.5.0/docs/api/java/io/InputStream.html?is-external=true) s) |
| void | [**execfile**](https://www.jython.org/javadoc/org/python/util/PythonInterpreter.html#execfile(java.io.InputStream,%20java.lang.String))([InputStream](http://java.sun.com/j2se/1.5.0/docs/api/java/io/InputStream.html?is-external=true) s, [String](http://java.sun.com/j2se/1.5.0/docs/api/java/lang/String.html?is-external=true) name) |
| void | [**execfile**](https://www.jython.org/javadoc/org/python/util/PythonInterpreter.html#execfile(java.lang.String))([String](http://java.sun.com/j2se/1.5.0/docs/api/java/lang/String.html?is-external=true) filename)            Executes a file of Python source in the local namespace. |

编译运行python code

|  |  |
| --- | --- |
| void | [**exec**](https://www.jython.org/javadoc/org/python/util/PythonInterpreter.html#exec(org.python.core.PyObject))([PyObject](https://www.jython.org/javadoc/org/python/core/PyObject.html" \o "class in org.python.core) code)            Executes a Python code object in the local namespace. |
| void | [**exec**](https://www.jython.org/javadoc/org/python/util/PythonInterpreter.html#exec(java.lang.String))([String](http://java.sun.com/j2se/1.5.0/docs/api/java/lang/String.html?is-external=true) s)            Executes a string of Python source in the local namespace. |

Set Variable

|  |  |
| --- | --- |
| void | [**set**](https://www.jython.org/javadoc/org/python/util/PythonInterpreter.html#set(java.lang.String,%20java.lang.Object))([String](http://java.sun.com/j2se/1.5.0/docs/api/java/lang/String.html?is-external=true) name, [Object](http://java.sun.com/j2se/1.5.0/docs/api/java/lang/Object.html?is-external=true) value)            Sets a variable in the local namespace. |
| void | [**set**](https://www.jython.org/javadoc/org/python/util/PythonInterpreter.html#set(java.lang.String,%20org.python.core.PyObject))([String](http://java.sun.com/j2se/1.5.0/docs/api/java/lang/String.html?is-external=true) name, [PyObject](https://www.jython.org/javadoc/org/python/core/PyObject.html" \o "class in org.python.core) value)            Sets a variable in the local namespace. |

Get Variable

|  |  |
| --- | --- |
| [PyObject](https://www.jython.org/javadoc/org/python/core/PyObject.html) | [**get**](https://www.jython.org/javadoc/org/python/util/PythonInterpreter.html#get(java.lang.String))([String](http://java.sun.com/j2se/1.5.0/docs/api/java/lang/String.html?is-external=true) name)            Returns the value of a variable in the local namespace. |
| |  | | --- | | <T> T | | [**get**](https://www.jython.org/javadoc/org/python/util/PythonInterpreter.html#get(java.lang.String,%20java.lang.Class))([String](http://java.sun.com/j2se/1.5.0/docs/api/java/lang/String.html?is-external=true) name, [Class](http://java.sun.com/j2se/1.5.0/docs/api/java/lang/Class.html?is-external=true)<T> javaclass)            Returns the value of a variable in the local namespace. |

**PyObject、PyFunction、、、、**

Jython评价：

Jython programs can import and use any Java class. Except for some standard modules, Jython programs use Java classes instead of Python modules. Jython includes almost all of the modules in the standard Python programming language distribution, lacking only some of the modules implemented originally in C. For example, a user interface in Jython could be written with Swing, AWT or SWT. Jython compiles to Java bytecode (intermediate language) either on demand or statically.

存在缺陷：原生C框架可能没办法全部实现。

优势：Jython由于继承了Java和Python二者的特性而显得很独特。

**Problem 2：python实现人脸识别**

**Answer 2：**

**利用face\_recongition module来对上传的图片进行处理**

Reference：

<https://github.com/ageitgey/face_recognition/blob/master/README.md>

import face\_recognition

image = face\_recognition.load\_image\_file("your\_file.jpg")

face\_locations = face\_recognition.face\_locations(image)

import face\_recognition

image = face\_recognition.load\_image\_file("your\_file.jpg")

face\_landmarks\_list = face\_recognition.face\_landmarks(image)

Demo：

<https://github.com/Zongziyu/CUC_face2music/tree/python/Demo4Learning>