AIM API supporting materials

AIM API discussions and examples from Daniel Rubin

Creating sample Image Annotation instance

Bar.java

```
ImageAnnotation imageAnnotation = new ImageAnnotation(0, "AIM.1.0", "", "2008-04-11T15:32:15", "0022",

"1.2.288.3.2205383238.1512.1207945935.1", "112041", "Target Lesion Complete Response", "DCM", null,
null);

// Person Start

Person person = new Person();

person.setBirthDate("2000-01-01T00:00:00");

person.setCagridId(0);

person.setName("1.3.6.1.4.1.9328.50.1.0022");

person.setId("409978");

person.setSex("M");

imageAnnotation.addPerson(person);

// Person End

// ImageReference start

DICOMImageReference dicomImageReference = new DICOMImageReference();

dicomImageReference.setCagridId(0);

// ImageStudy start

ImageStudy imageStudy = new ImageStudy();

imageStudy.setCagridId(0);

imageStudy.setInstanceUID("1.3.6.1.4.1.9328.50.1.11470");

imageStudy.setStartDate("2000-01-01T00:00:00");

imageStudy.setStartTime("+00:00:00.000000");

// ImageSeries start

ImageSeries imageSeries = new ImageSeries();

imageSeries.setCagridId(0);

imageSeries.setInstanceUID("1.3.6.1.4.1.9328.50.1.11563");

// Image start

Image image = new Image();

image.setCagridId(0);
```

```
image.setSopClassUID("1.2.840.10008.5.1.4.1.1.2");

image.setSopInstanceUID("1.3.6.1.4.1.9328.50.1.11623");

// Image into ImageSeries

imageSeries.addImage(image);

// ImageSeries into ImageStudy

imageStudy.addImageSeries(imageSeries);

// ImageStudy into ImageReference

dicomImageReference.addImageStudy(imageStudy);

// ImageReference into ImageAnnotation

imageAnnotation.addImageReference(dicomImageReference);

// ImageReference end

// GeometricShape start

Polyline polyline = new Polyline(0, "", "", "", "", false, \-1);

TwoDimensionSpatialCoordinate spatialCoordinate_1 = new TwoDimensionSpatialCoordinate(0, 0,

"1.3.6.1.4.1.9328.50.1.10717", 0, 143.0, 300.0);

TwoDimensionSpatialCoordinate spatialCoordinate_2 = new TwoDimensionSpatialCoordinate(0, 1,

"1.3.6.1.4.1.9328.50.1.10717", 0, 92.0, 326.0);

polyline.addSpatialCoordinate(spatialCoordinate_1);

polyline.addSpatialCoordinate(spatialCoordinate_2);

imageAnnotation.addGeometricShape(polyline);

// GeometricShape end

// Equipment start

Equipment equipment = new Equipment(0, "GE MEDICAL SYSTEMS", "", "");

imageAnnotation.addEquipment(equipment);

// Equipment end

// User start

User user = new User(0, "A", "NWU", "Referring", 3);

imageAnnotation.addUser(user);

// User end

// ImagingObservation start

ImagingObservation imagingObservation = new ImagingObservation(0, "REX4010", "Calcification",
"RADREX",

null, "", null, null, "");

ImagingObservationCharacteristic imagingObservationCharacteristic = new
ImagingObservationCharacteristic(0,

"REX4020", "LIDC Calcification 1", "RADREX", null, "", null, "");
```

```
imagingObservation.addImagingObservationCharacteristic(imagingObservationCharacteristic);

imageAnnotation.addImagingObservation(imagingObservation);

// ImagingObservation end
\\

*Saving Image Annotation instance to File*

// Always I check the ImageAnnotation if it valid based on the AIM XML Schema

imageAnnotation.saveToFile("C:/test.xml", "C:/AIM_v3.xsd");

* *

*Saving Image Annotation instance to Server*

// Required Parameters to be able to access BerkeleyDB

String namespace = "gme://caCORE.caCORE/3.2/edu.northwestern.radiology.AIM";

String serverUrlUpload =
"[http://rufus.stanford.edu:8100/annotations/upload|http://rufus.stanford.edu:8100/annotations/upload]";
serverUrlDownload =
"[http://rufus.stanford.edu:8100/annotations/xquery|http://rufus.stanford.edu:8100/annotations/xquery]";
\*****\* SAVING ANY IMAGE ANNOTATION TO THE XML DATABASE

// I choose 'test_db' as my collection name. It can be chanced.

// Before send my ImageAnnotation to the server, I check if it is already exist.

// Because we don't want to insert more than one ImageAnnotation which has same UniqueIdentifier value

if (\!AnnotationGetter.isExistInTheServer(serverUrlDownload, namespace, "test_db", imageAnnotation

.getUniqueIdentifier())) {

// I'm sending my ImageAnnotation to the server.

String res = imageAnnotation.saveToServer(serverUrlUpload, serverUrlDownload, namespace, "test_db",

"C:/AIM_v3.xsd");

// Displaying Server's response.

System.out.println(res);

}

* *

*Get an Image Annotation from File*

// Using AnnotationGetter static class

ImageAnnotation imageAnnotation = AnnotationGetter.getImageAnnotationFromFile("C:/AIM_Sample.xml",

"C:/AIM_v3.xsd");
\\

*Get an Image Annotation from Server by its UniqueIdentifier*

// Required Parameters to be able to access BerkeleyDB

String namespace = "gme://caCORE.caCORE/3.2/edu.northwestern.radiology.AIM";

String serverUrlDownload =
"[http://rufus.stanford.edu:8100/annotations/xquery|http://rufus.stanford.edu:8100/annotations/xquery]";
Using AnnotationGetter static class
```

```
ImageAnnotation imageAnnotation =

AnnotationGetter.getImageAnnotationFromServerByUniqueIdentifier(serverUrlDownload, namespace,
"test_db",

"1.2.288.3.2205383238.1512.1207945935.5", "C:/AIM_v3.xsd");

* *

*Extracting the Type of the ROI and the Coordinates*

ImageAnnotation imageAnnotation = AnnotationGetter.getImageAnnotationFromFile("C:/AIM_Sample.xml",

"C:/AIM_v3.xsd");

GeometricShapeCollection geometricShapeCollection = anno_211.getGeometricShapeCollection();

for (int i = 0; i < geometricShapeCollection.getGeometricShapeList().size(); i++) {

GeometricShape geometricShape = geometricShapeCollection.getGeometricShapeList().get\(i);

System.out.println(geometricShape.getXsiType());

for (int j = 0; j < geometricShape.getSpatialCoordinateCollection().getSpatialCoordinateList().size();

j++) {

SpatialCoordinate spatialCoordinate =

geometricShape.getSpatialCoordinateCollection().getSpatialCoordinateList().get\(i);

if ("TwoDimensionSpatialCoordinate".equals(spatialCoordinate.getXsiType())) {

TwoDimensionSpatialCoordinate twoDimensionSpatialCoordinate = (TwoDimensionSpatialCoordinate)

spatialCoordinate;

System.out.println(twoDimensionSpatialCoordinate.getCoordinateIndex());

System.out.println(twoDimensionSpatialCoordinate.getX());

System.out.println(twoDimensionSpatialCoordinate.getY());

}
```

```
}

}
```

I forgot to include some query calls:

querycalls.java

```
ImageAnnotation AnnotationGetter.getImageAnnotationFromServerByUniqueIdentifier(serverURL, namespace,
collection, uniqueIdentifier, PathXSD)
cList<ImageAnnotation> AnnotationGetter.getImageAnnotationsFromServerByPersonNameEqual(serverURL,
namespace, collection, PersonName, PathXSD)
 List<ImageAnnotation> AnnotationGetter.getImageAnnotationsFromServerByPersonNameContains(serverURL,
namespace, collection, PersonName, PathXSD)
 List<ImageAnnotation> AnnotationGetter.getImageAnnotationsFromServerByDateTimeEqual(serverURL,
namespace, collection, dateTime, PathXSD)
 List<ImageAnnotation> AnnotationGetter.getImageAnnotationsFromServerByDateTimeContains(serverURL,
namespace, collection, dateTime, PathXSD)
 List<ImageAnnotation> AnnotationGetter.getImageAnnotationsFromServerByCagridIdEqual(serverURL,
namespace, collection, cagridId, PathXSD)
 List<ImageAnnotation> AnnotationGetter.getImageAnnotationsFromServerByCagridIdContains(serverURL,
namespace, collection, cagridId, PathXSD)
 List<ImageAnnotation> AnnotationGetter.getImageAnnotationsFromServerByNameEqual(serverURL, namespace,
collection, name, PathXSD)
 List<ImageAnnotation> AnnotationGetter.getImageAnnotationsFromServerByNameContains(serverURL,
namespace, collection, name, PathXSD)
 List<ImageAnnotation> AnnotationGetter.getImageAnnotationsFromServerByCodeMeaningEqual(serverURL,
namespace, collection, codeMeaning, PathXSD)
 List<ImageAnnotation> AnnotationGetter.getImageAnnotationsFromServerByCodeMeaningContains(serverURL,
namespace, collection, codeMeaning, PathXSD)
 List<ImageAnnotation> AnnotationGetter.getImageAnnotationsFromServerByCodeValueEqual(serverURL,
namespace, collection, codeValue, PathXSD)
 List<ImageAnnotation> AnnotationGetter.getImageAnnotationsFromServerByCodeValueContains(serverURL,
namespace, collection, codeValue, PathXSD)
 List<ImageAnnotation>
AnnotationGetter.getImageAnnotationsFromServerByCodingSchemeDesignatorEqual(serverURL, namespace,
collection, codingSchemeDesignator, PathXSD)
 List<ImageAnnotation>
AnnotationGetter.getImageAnnotationsFromServerByCodingSchemeDesignatorContains(serverURL, namespace,
collection, codingSchemeDesignator, PathXSD)
```