Breast Cancer Detection Model
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Steps:

1) All images are down sampled to (64,64) pixels

2) Data were augment by the factor of 360 by rotating it for 360 times each time one more degree

3) Data was shuffled and 0.8-0.2 train-test ratio were applied.

4) The model Architecture is as follows:

```python
model = Sequential()
model.add(Conv2D(32, (3, 3), input_shape=(rows, cols, 1)))
model.add(Activation('relu'))
model.add(Conv2D(32, (3, 3)))
model.add(Activation('relu'))
model.add(Conv2D(64, (3, 3), padding='valid', strides=(1, 1)))
model.add(Activation('relu'))
model.add(Conv2D(64, (3, 3), padding='valid', strides=(1, 1)))
model.add(Activation('relu'))
model.add(MaxPool2D(pool_size=(2, 2)))
model.add(Dropout(0.25))
model.add(Flatten())
model.add(Dense(64))
model.add(Activation('relu'))
model.add(Dropout(0.5))
model.add(Dense(1))
model.add(Activation('sigmoid'))
```

5) Optimizer and loss function are :

```python
model.compile(optimizer='adam', loss='binary_crossentropy', metrics=['accuracy'])
```

6) Fitting model with the batch_size=128 and 10 epochs

Results on training images :   accuracy = 95.7%   loss = 0.107

Test Model on a single new image (example):

```python
image_address='./all-mias/mdb186.pgm'
model_address='./Mohsen_cance_model.h5'
test_on_new_image(image_address,model_address)
```