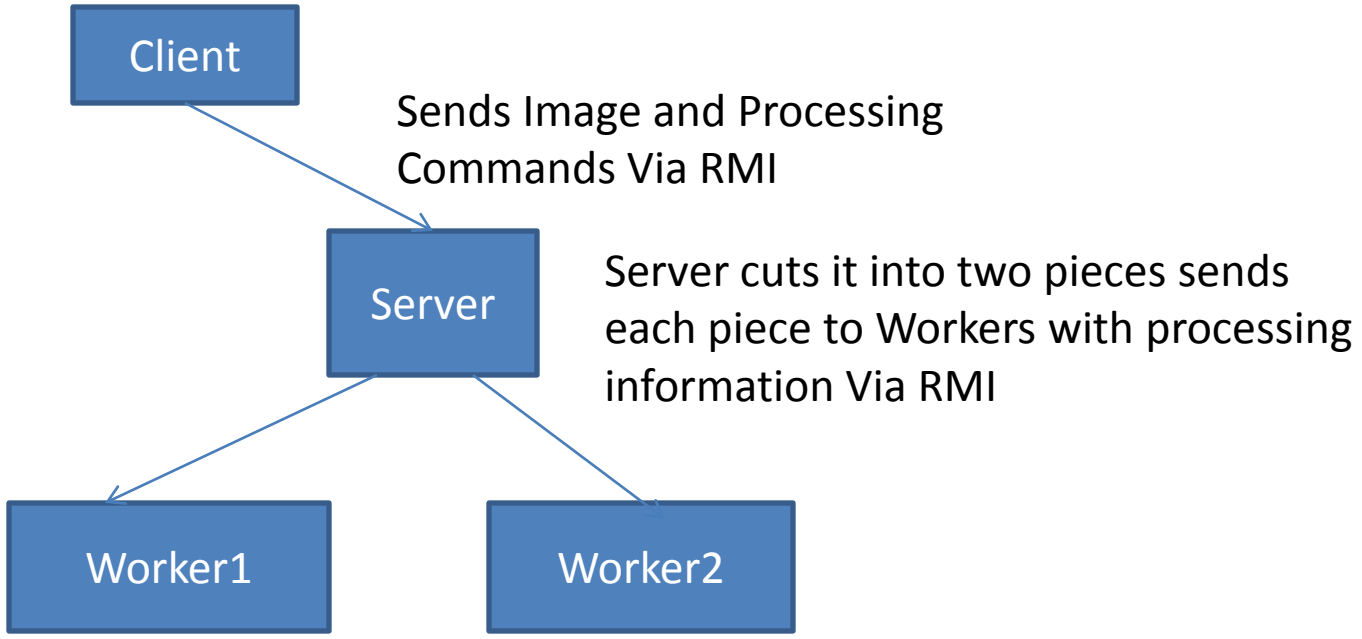
Quick Introdction

Technologies

- Java
- Matlab
- Java RMI (remote method invocation)

structure

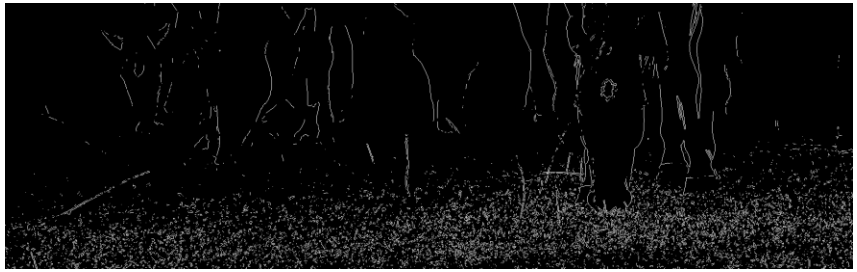
- One (or more) client
- One Server
- Two or More (workers)

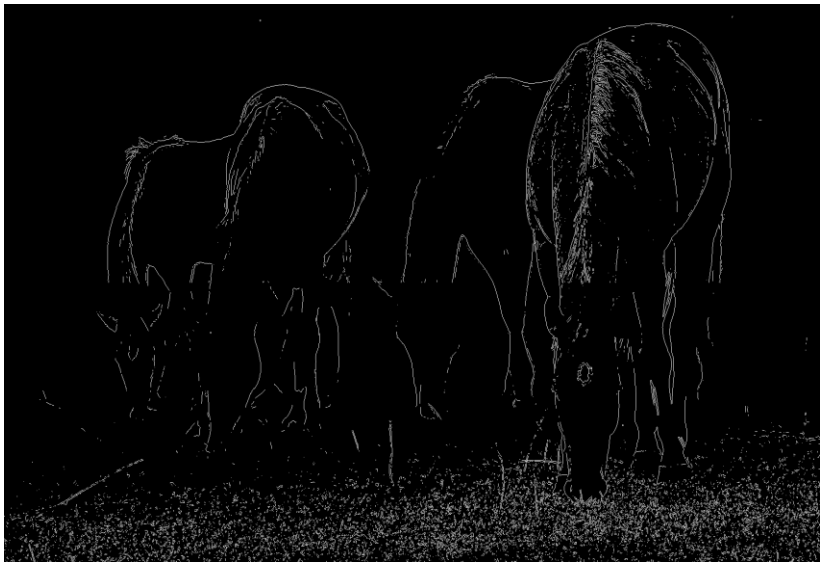

Client
Sends Image and Processing Commands Via RMI
Server
Server cuts it into two pieces sends each piece to Workers with processing information Via RMI
Worker1
Worker2
Process the images using Matlab and send back to Server

Problems

We are spatially dividing the image. Several operations on image rely on the global data. Image filtering for example relies on the knowledge of “pixel neighborhood”. If we divide the image into multiple parts the gobal data is incomplete for each worker hence the particular operation like “Edge Detection” will not be effective. Especially at places where the image was cut.

Edge Detection using Sobel Filter





Cant do flip

- Flipping an image can not be done by dividing it.

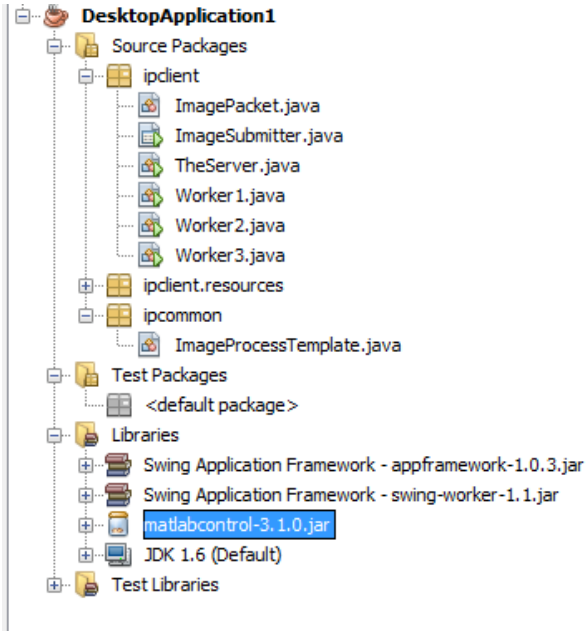
Contid

- Operations like color inversion however can be calculated without any issue by fragmenting the image

Setup Instruction

- Trying it on a single machine first
  - Get a pen drive
  - Put the given folder matlabIP on the pen drive
  - Change the pen drive letter to “I:\”
  - Keep the color.png file on the “i:\”

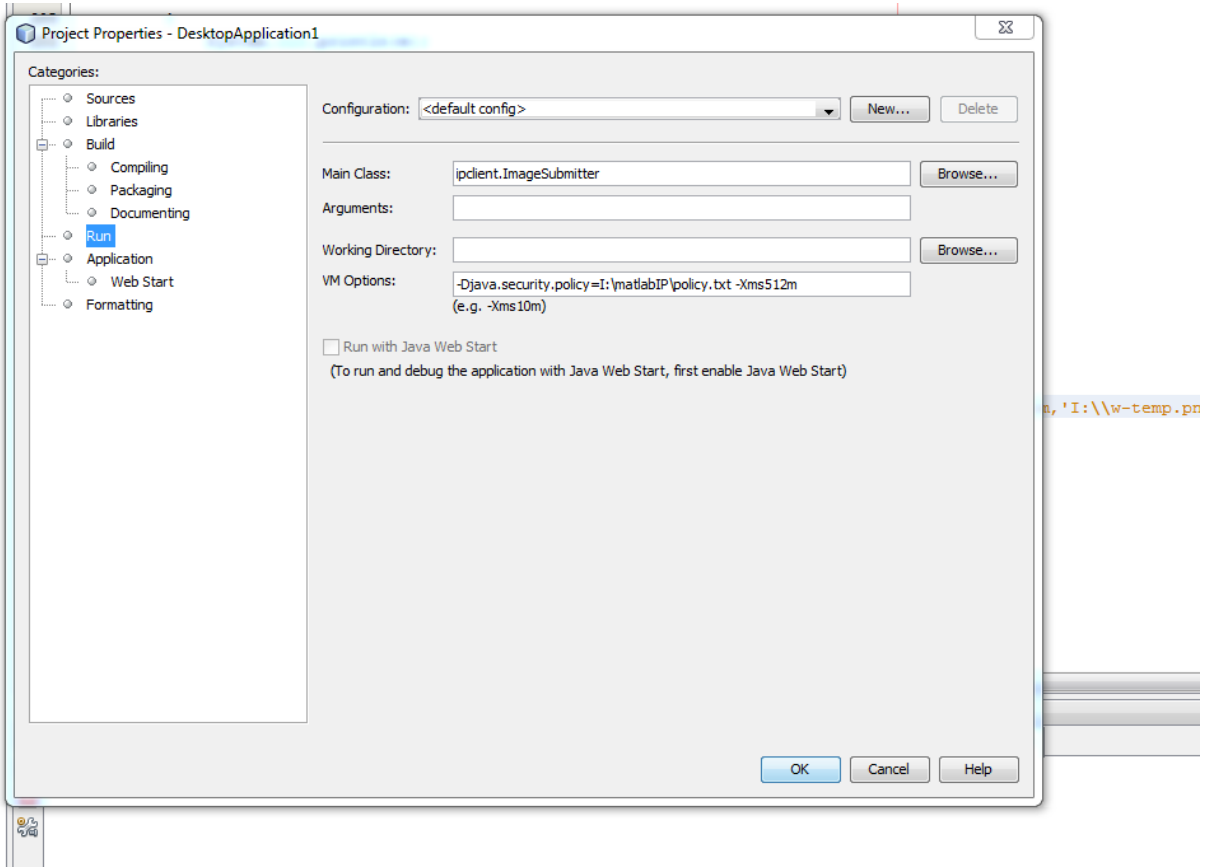
Code Files Open the Project in Netbeans



Make sure you can see all these files and they don't show any errors

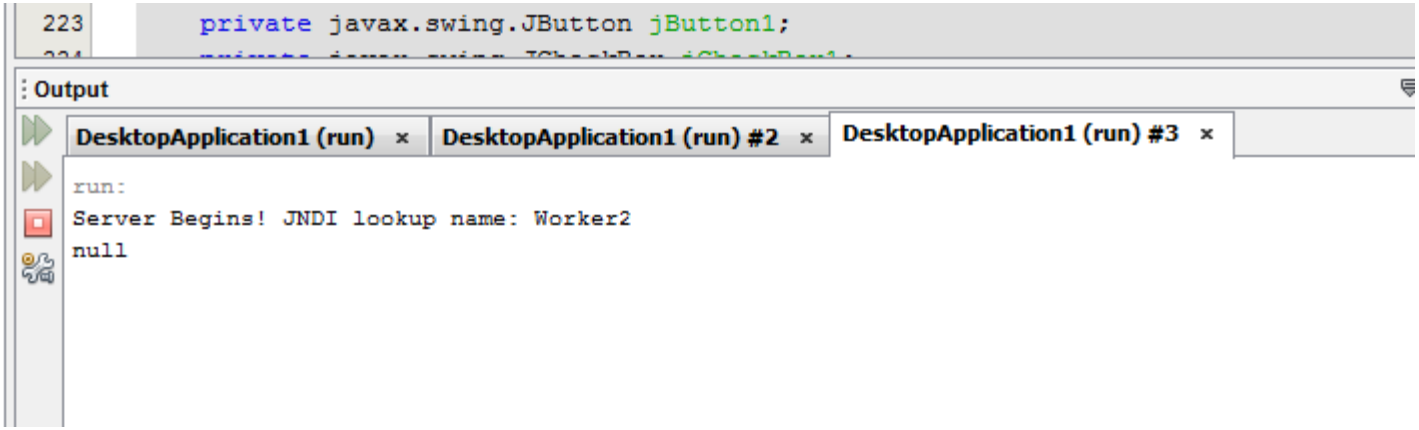
Setup

- Right click on the project and select Properties
- In the window opened select “Run” Make sure it looks like below



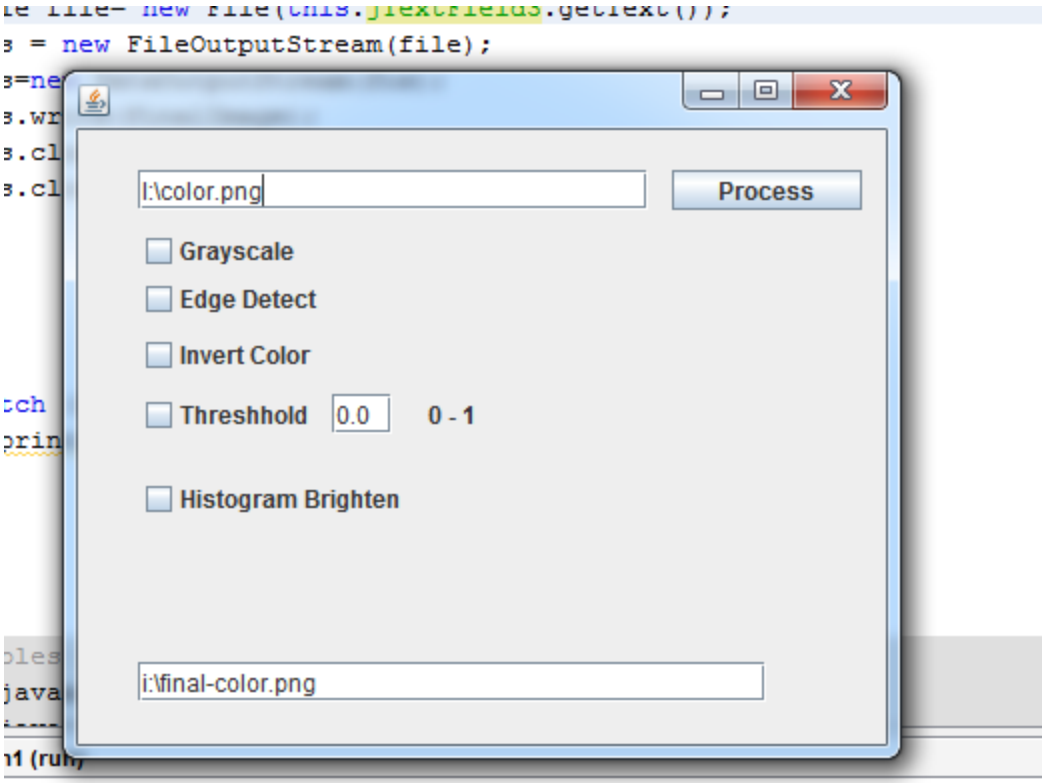
Running the Code

- Right Click and run “TheServer”
- Right Click and Run “Worker1”
- Right Click and Run “Wroker2”
- You should see the netbeans output window similar to :



Running the GUI

- Run the ImageSubmitter.java file to get the GUI



Note that

- It is good idea to select only one option at a time.
- It will work with multiple images as well but the results will be difficult to understand.

Running on multiple PCs

- I will need 4 machines.
- Get 4 pen-drives
- Put the matlabIP folder into each of them.
- Put each pen-drive into one machine
- Rename Drive letter to I:// (or else replace I:// to the letter of your choice in all code files)

The Server Machine

- Run the file “TheServer.java” only on this machine.
- Note the IP address of this machine. Called SERVER_IP henceforth

The Workers

- Run Worker1.java on machine
- Run Worker2.java on another machine
- Before that Change the line number 27
- Registry registry = LocateRegistry.getRegistry(1099);
- With
- Registry registry = LocateRegistry.getRegistry(“SERVER_IP”,1099);
- (the IP address to be passed as String)

The Client machine

- Make similar changes to ImageSubmitter.java
- On line 169

On All machines

- In the file “ImagePacket.java” on “ALL” machines
- Replace the line Registry registry = LocateRegistry.getRegistry(1099);
- With
- Registry registry = LocateRegistry.getRegistry(“SERVER_IP”,1099);

Call me Up if you face problems