

SELECTIVE IMAGE COMPRESSION

Presentation by:

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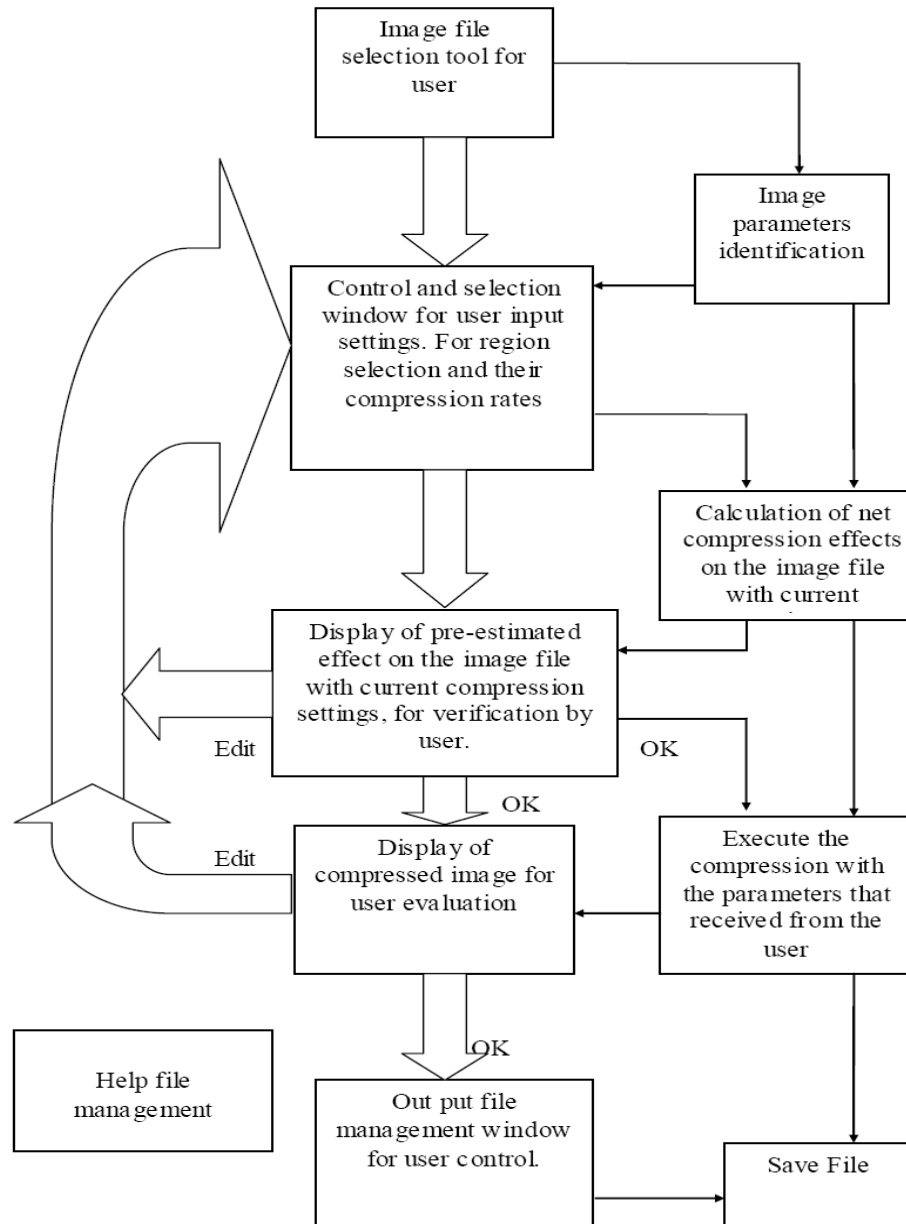
INTRODUCTION

- **sic** is a compression technique helps to keep the selected portion of the image lossless and compress the rest of the image and the quality of the image we can decide.
- this project keeps the quality of the selected portion as original picture

OBJECTIVE OF OUR PROJECT

- To compress a selective portion of the given image retaining the final quality of the image
- Benefit to users
- About programming

BLOCK DIAGRAM



ALGORITHM

- Read the image.
- Display the image for user verification. Also display image information.
- Option for selective or whole image compression.
- If selective provide option for image cropping.
- Display the resulting images for user verification.
- If not satisfied, provide option for re-cropping.
- Provide option for quality control.
- Provide option for wavelet selection.

ALGORITHM

(Cont....)

- Compress the selected part losslessly and rest of the image lossly.
- For whole image compression, compress the complete image lossly.
- Display the resulting images with file detailes for user verification.
- If not satisfied, repeat from step 4.
- Save the resulting image.

EXISTING COMPRESSION SYSTEMS

- “lossless” and “lossy” forms of data compression
- Lossless data compression -data to be uncompressed exactly as it was before compression.
- Lossy compression -data doesn't have to be stored perfectly.

HOW WE COMPRESS

- Images give details of colour and grayscale of each pixel in it.
- each pixel requires a particular amount of data to be represented as signals
- practically the data of each pixel has some interrelations with that of other pixels.

TRANSFORM CODING

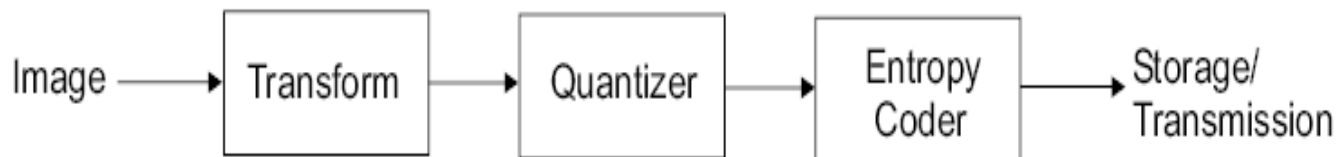
- First transform the image signal from space domain to a different domain depend on the transformation function
- Then encode the coefficients of the transformed result.
- Then transmit it.
- In the receiver reconstruct the original image by using inverse transformation.

ADVANTAGES

- Transform coefficients are relatively uncorrelated
- Energy is highly compacted
- Reasonable robust relative to channel errors

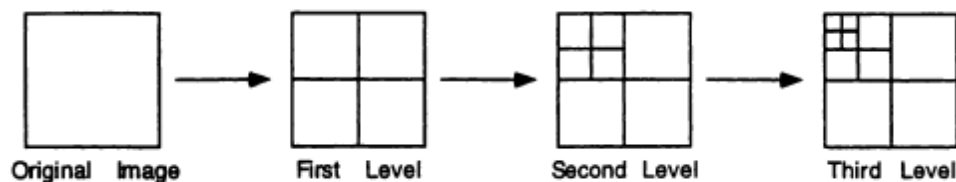
TRANSFORM-BASED IMAGE COMPRESSION

- Most successful image compression algorithms are transform-based
- Block diagram of the transform image compression system



TRANSFORM-BASED IMAGE COMPRESSION (Cont...)

- Wavelet transform performs an octave sub band decomposition of an image.



LL	LH
HL	HH

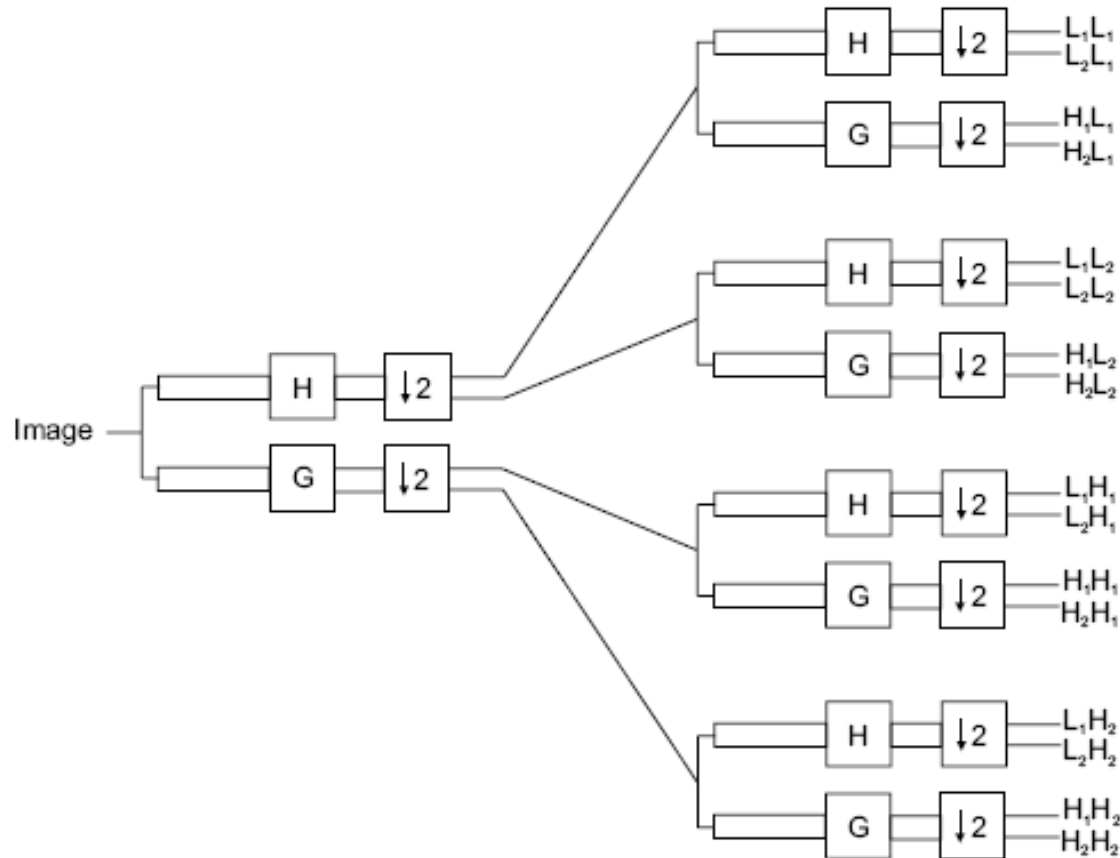
(a)

L_1L_1	L_1L_2	L_1H_1	L_1H_2
L_2L_1	L_2L_2	L_2H_1	L_2H_2
H_1L_1	H_1L_2	H_1H_1	H_1H_2
H_2L_1	H_2L_2	H_2H_1	H_2H_2

(b)

Comparison of one-level (a) scalar wavelet and (b) multiwavelet decompositions.

SUB BAND DECOMPOSITION



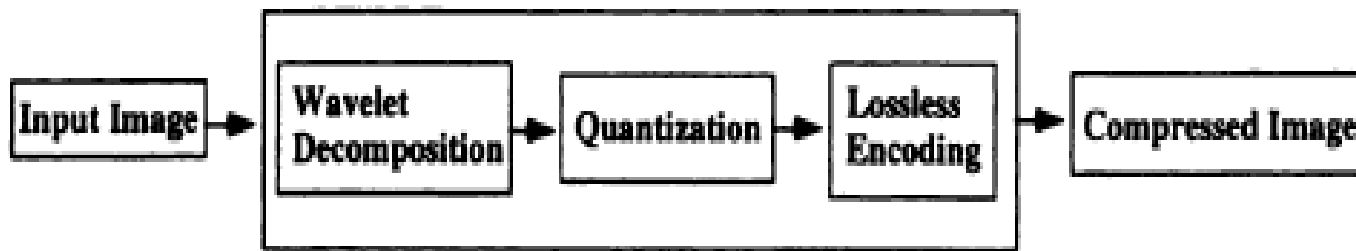
The analysis stage of a 2-D, 1-level multiwavelet decomposition with $r = 2$.

WAVELET-BASED COMPRESSION ALGORITHM

Three steps involved

1. Image transformation,
2. Quantization,
3. Encoding

BLOCK DIAGRAM



MATLAB TOOLS

- High-level technical computing language
- Interactive environment for algorithm development, data visualization, data analysis, and numeric computation.

MATLAB FEATURES

1. High-level language for technical computing
2. Development environment for managing code, files, and data
3. Interactive tools for iterative exploration, design, and problem solving

MATLAB FEATURES

(Cont...)

4. Mathematical functions for linear algebra, statistics, Fourier analysis
5. 2-D and 3-D graphics functions for visualizing data
6. Tools for building custom graphical user interfaces

RESULT

The project entitled SELECTIVE IMAGE COMPRESSION is done and the Figures showing different stages are shown below

Figure 1: Main Window of our Project



Figure 2: This is how our project looks when we press LOAD button

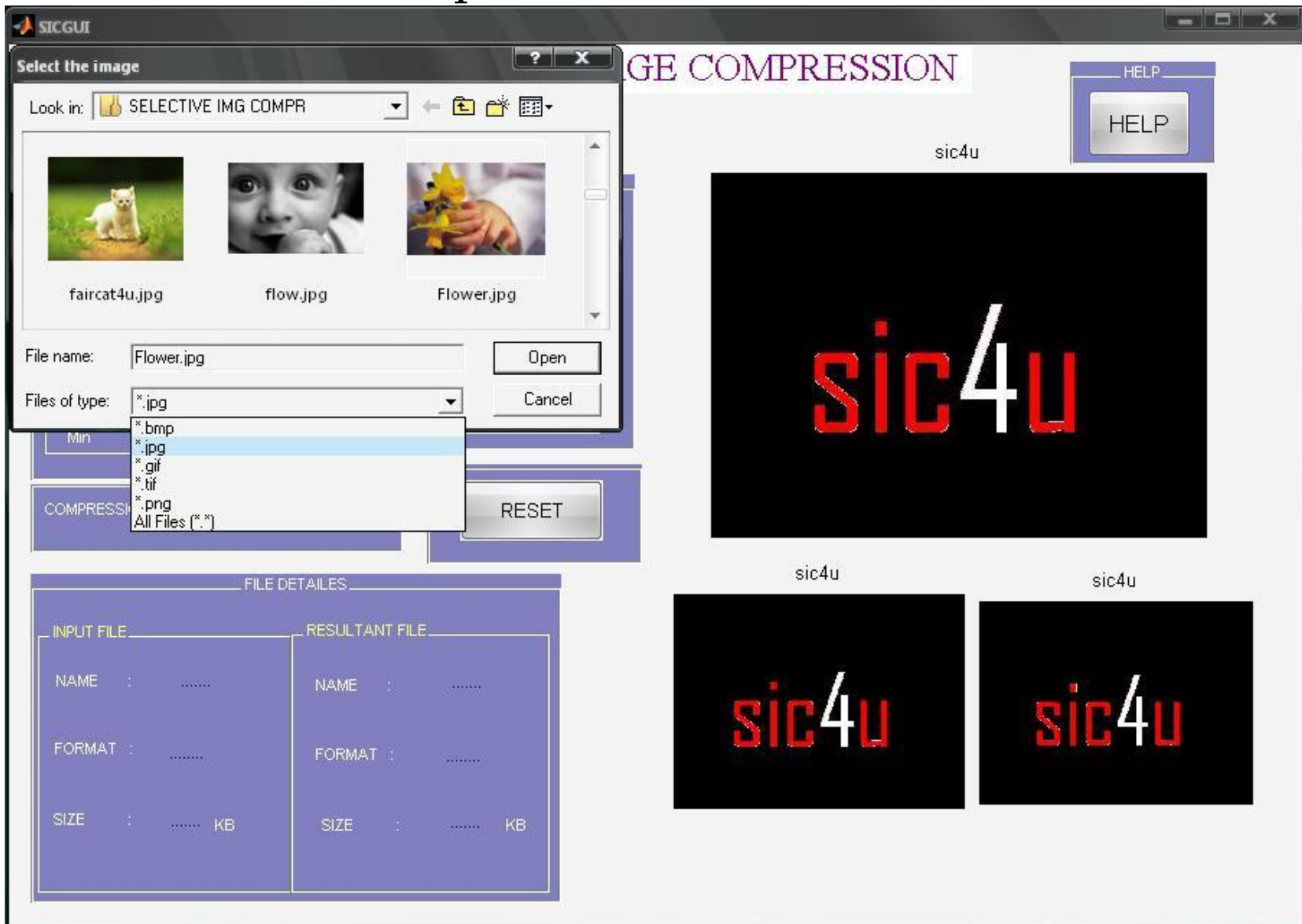


Figure 3: Selection of the picture, picture details are also shown

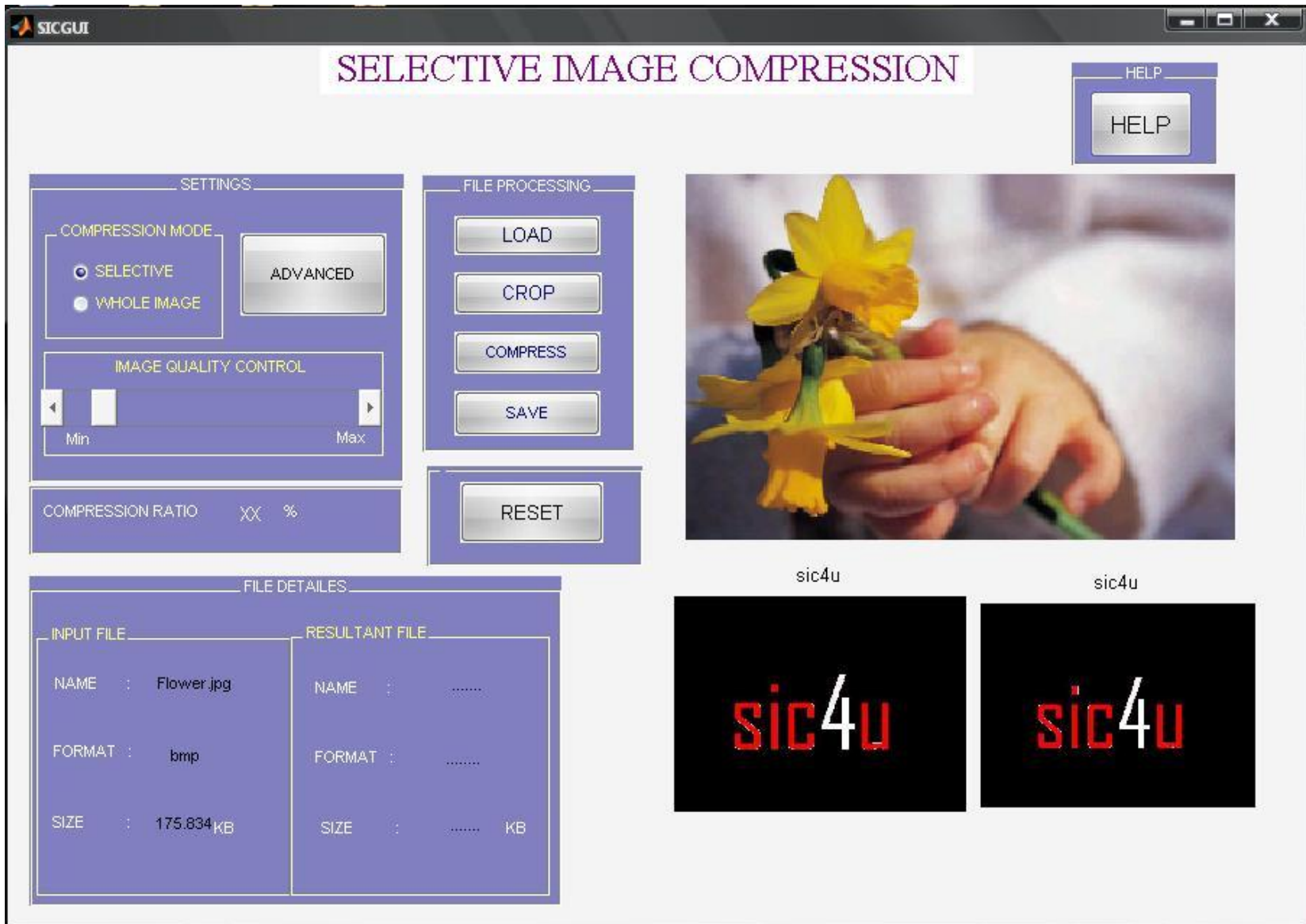


Figure 4: This window Shows the Advanced Selection ie, Selection of WAVELET by clicking ADVANCED button

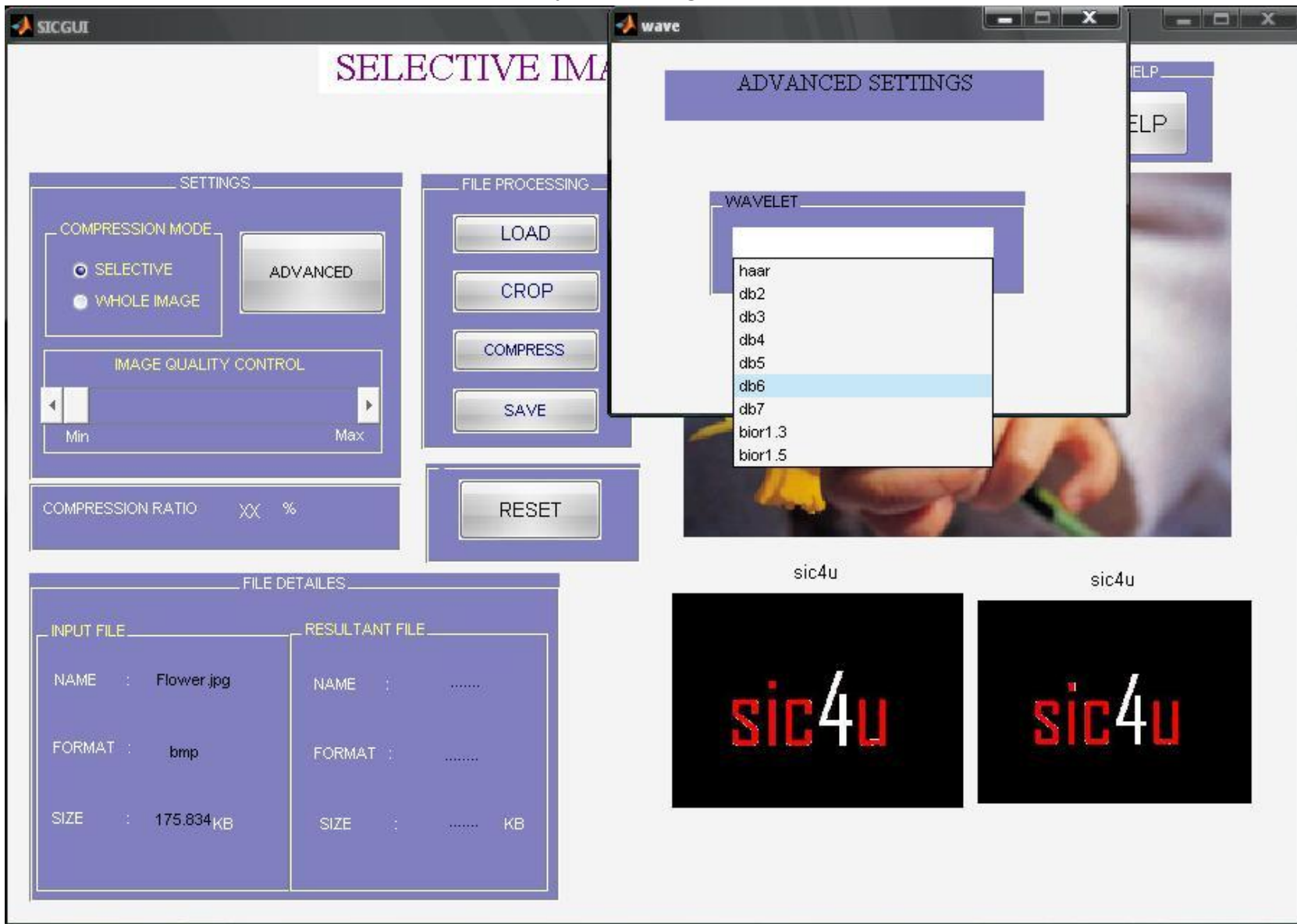


Figure 5: For cropping the image and Quality control

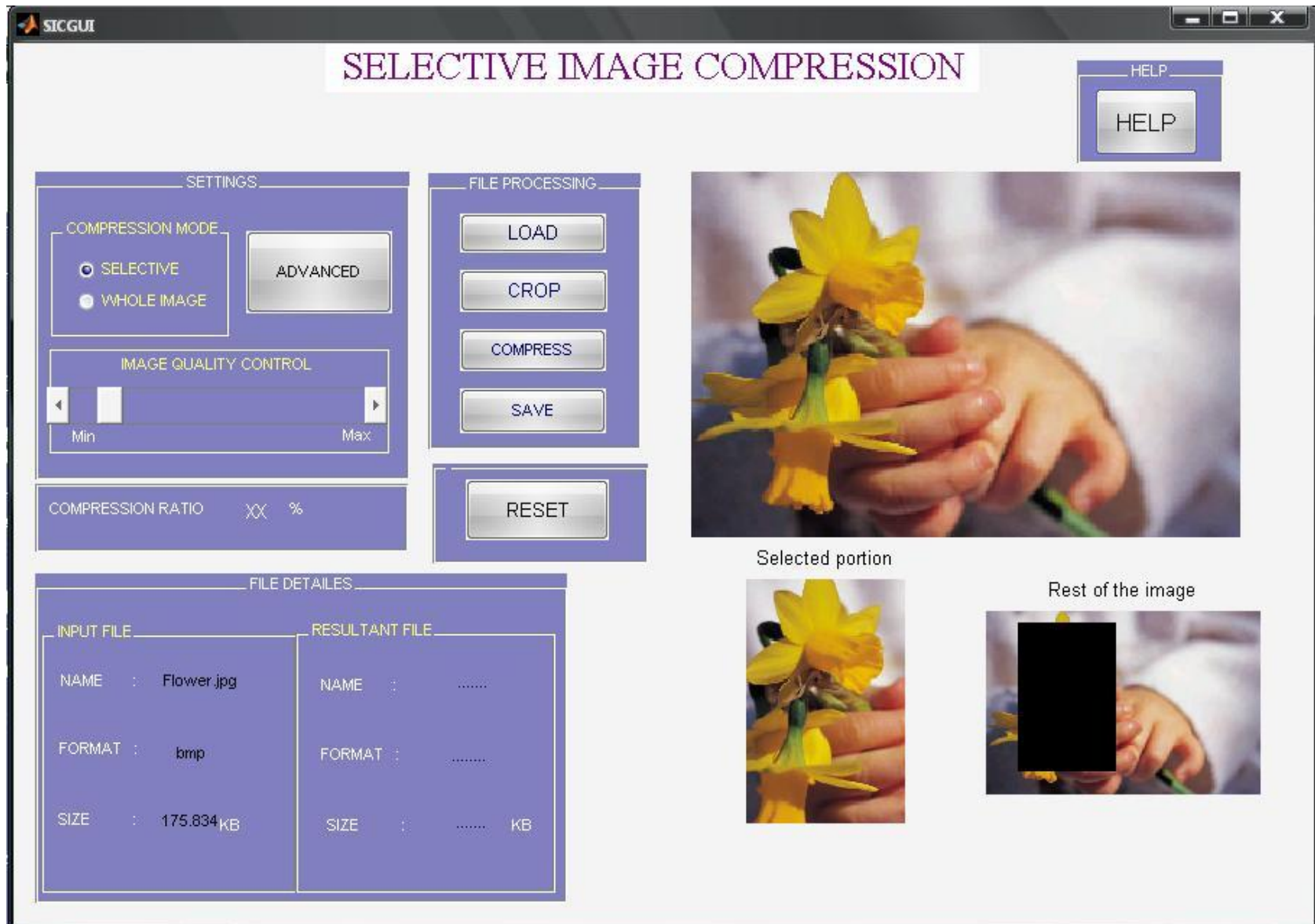


Figure 6: This window shows the compressed image and its details by pressing the COMPRESS button

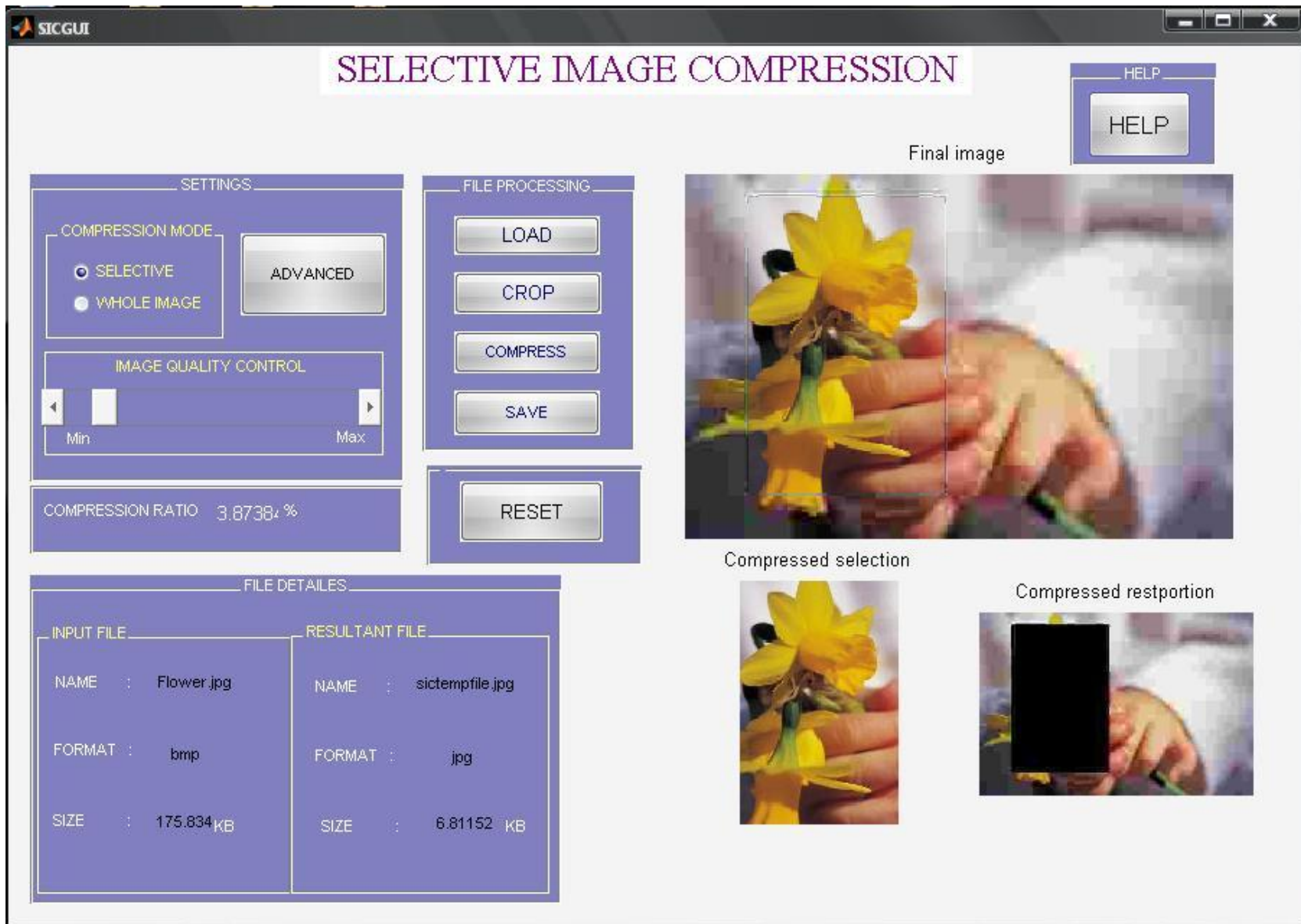


Figure 7: This window shows when we click the SAVE button to the Final image

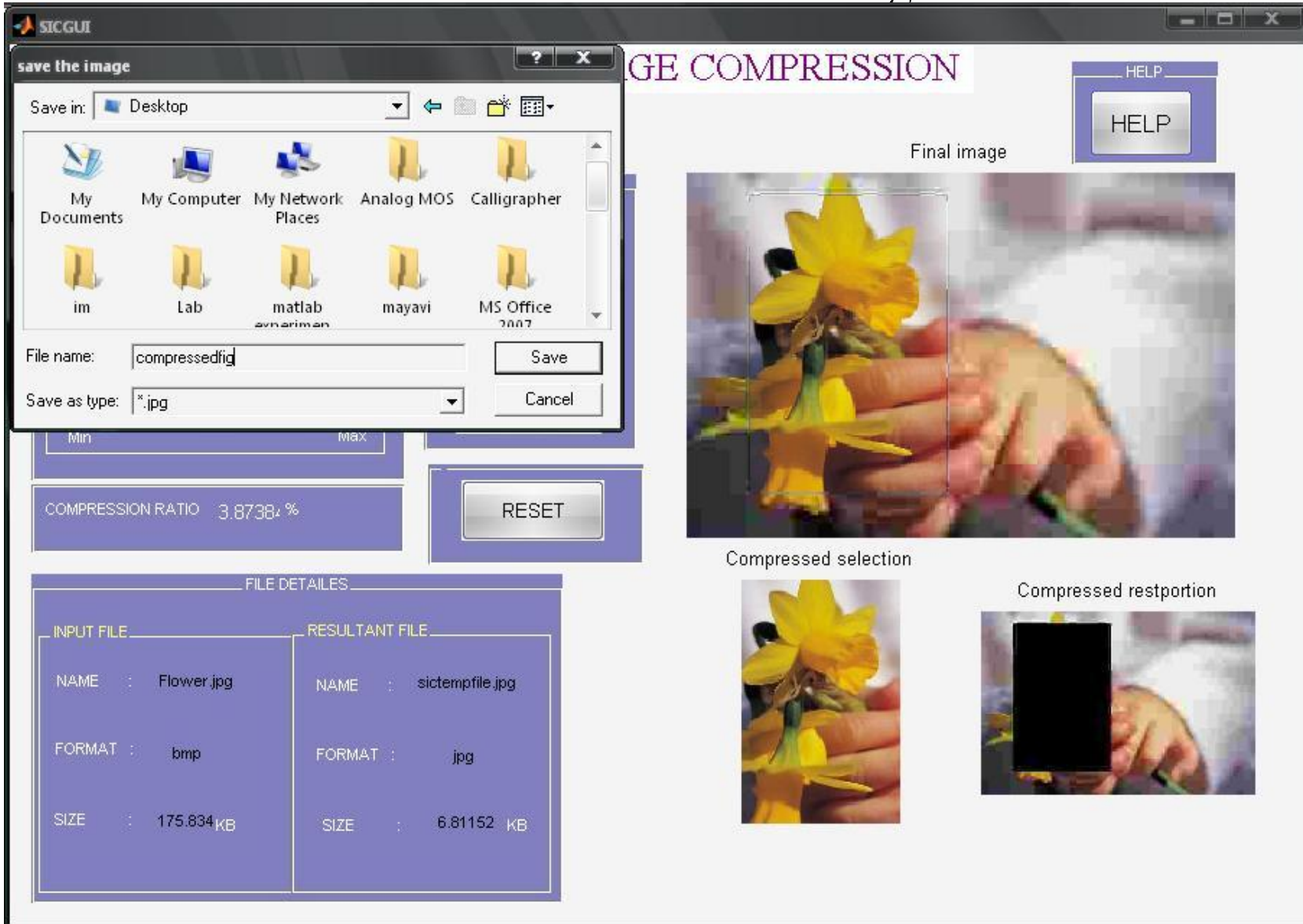
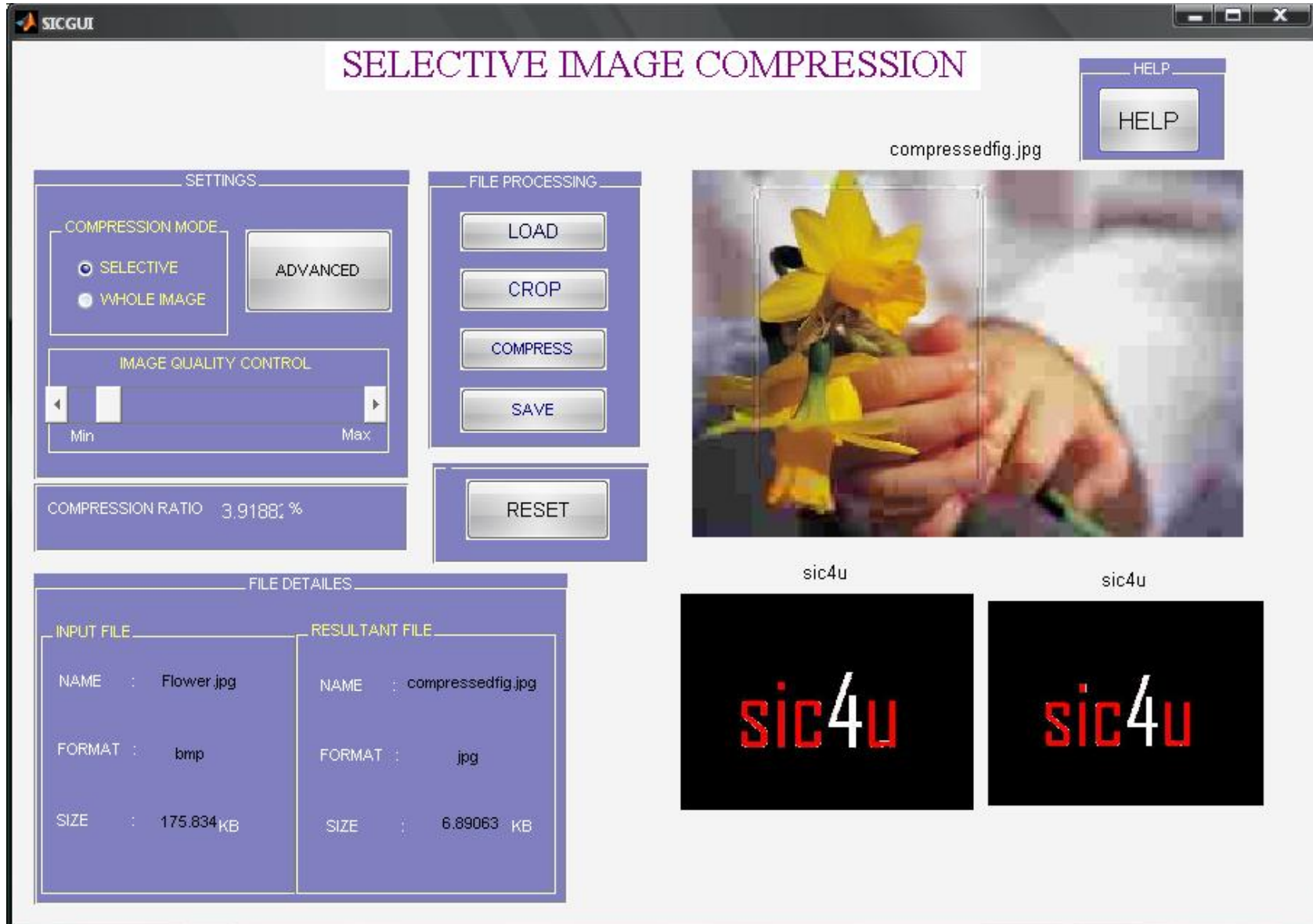


Figure 8: This figure shows the Final Stage of our Project after saving the image



REFERENCES

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- <http://citeseer.ist.psu.edu>
- www.wolfram.com
- www.BizRate.com
- www.blubox.com
- www.matlabcentral.com

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