R.O.A.R.S.
Real-time Object and Atmosphere Reconstruction System

Managing Video Files
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What is R.O.A.R.S.? 

- Real-time
- Object and Atmosphere Reconstruction System

- A GUI program that performs both:
  - Image Reconstruction
  - Image Analysis
BASIC MODEL OF HOW THE ROARS PROGRAM WORKS

Multi-Frame Blind Deconvolution

Superresolution

Removing atmospheric blur and corruption

Improve image resolution in a camera jitter/rotation.
BASIC MODEL OF HOW THE ROARS PROGRAM WORKS

Inputs, Calibrations, Tracker, Optical System are model parameters

User will set parameters → Run algorithm → Runs the algorithm that is based on the parameters
Results of the ROARS program

Input

Output
BASIC MODEL OF HOW THE ROARS PROGRAM WORKS

Plots used to analyze a metric value

Data image analysis

Managing, creating and converting video files.

Point sources used for metrics computation and tracking objects.
Objective

C/C++ Sample program that will manage video files

- Reads any video file as an input.
- Randomly accesses any frame in the video file.
- Gives information about the video file.
- Saves each desired frame or links the chosen frames together into one video file.
- Converts any video file into a Mpeg-4 format.
Approach/steps in designing the program

• Flow of the program
  • Initialize required libraries and variables
  • Read input file
  • Access desired frames
  • Set mpeg-4 parameters
  • Link frames together
  • Write to output file
  • Free all allocated memory

• Incorporate functions from the ffmpeg library

• C/C++ Programming Language
  • Compatible with existing code
  • Xemacs
  • Linux Compiler
Supports any video format as an input

Explanation of feature
• Supports up to 70 different types of video formats.

Testing and verification
• Tested four common video formats by performing error checking.

| MPEG-1 video |
| MPEG-2 video |
| AVI |
| MPEG-4 |
Displays information about the input file

Explanation of feature
• Displays video information such as
  • Type of video file
  • Duration
  • Bit-rate
  • Frames per second
  • Size of video file

Testing and verification

```
Input #0, avi, from '<null>':
  Duration: 00:00:01.5, start: 0.000000, bitrate: 353 kb/s
  Stream #0.0, 10.52 fps(r): Video: rawvideo, pal8, 64x64
  encoding frame 1 (size= 0)
There are 1 save frames.
```


RANDOMLY accesses frames

EXPLANATION OF FEATURE
• RANDOMLY ACCESS ANY FRAME WITHIN THE VIDEO FILE
• DESIRED FRAME IS CHOSEN AND A MPEG-4 FILE CAN BE CREATED

TESTING AND VERIFICATION
Link frames into a MPEG-4 video file

Explanation of feature
- Link all desired frames
- Combine into one MPEG-4 file.

Testing and verification

**Input:** “AVI file” (66KB)

**Output:** “MPEG-4 file” (4KB)
Future Plans

R.O.A.R.S. PROGRAM

Graphical User Interface

Input Data: Image/Video

Reconstruction Of Image

Data Image Analysis

Supports any type of Video Files

C/C++ Program that will manage video files

Converts video file to MPEG-4 Format
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ANY QUESTIONS