MATRIXED
www.matrixed.unhandledexception.net

Concordia University
Software Engineering and Computer Science

Maher Taha 4721659 ....Video, Open GL, Math
Spiro Govas 5063639 ....Concept Leader
Islam Elkady 5045436 .... Open GL, Jitter Programming
Sandra Friesen 2688506 .... Open GL, Sound Programming
Marika Kapogeorgakis 5171938............................ Artwork, Jitter Programming

(This is a preliminary outline of each person's role, subject to change)

1 Project Definition

The main idea of the Project for Comp 471, originated from a Toyota commercial for the Matrix car. It begins with a cartoon looking image and transforms by peeling the image layer off the real image resulting in plain video.

We are going to expand on that idea by starting with a real live video that will be modified to appear as a computer generated graphic.

Secondly we will add objects and features to make it appear in different settings, (ie trees, water, desert, night and day) using a combination of Max/Jitter and Open GL. Each objects has colors and textures associated with them. The trees have leaves, the water has ripples, desert has sand, night is dark and starry, and day is bright.

The video starts with a default car color that will be specified later. When the car accelerates the texture and color have the affect of flowing off the back of the car leaving the original color.

Figure 1, The Original Car Color

When the car passes one of the objects either, the color of the object will change according to the color of the car; or the car will pick up the color and texture of the environment object to change its original color.

Figure 2, Original Red Car Color entering the Ocean

Figure 3, Blue Car Color after being altered by the environment

The sound will vary according to the background, the music will change along with the theme environment ie: desert (horses running) water (waterfall) city (vroom vroom) forest (wind) mountain (rumbling).When the car speeds or turns sharply, the sound becomes more intense.

2 Technical Interest

2.1 Sound programming

Sound programming plays a very important role in the Matrixed application. The sound has to be controlled at all times while the application is running. The sound will be changed based on different factors, such as: car accelerating, environment setting, turning, and also based on what the car is driving on (gravel, pavement, highway, bridge).

2.2 Jitter programming

Jitter programming will be used to capture the live video. The sound and Open GL will be manipulated in Jitter. We will process the video by initially splitting it by using a motion detection process within Jitter. The environment setting or background will be further processed in Open GL.

2.3 Open GL Programming

Open GL Programming will sample the color of the object that is moving and will alter the objects in the environment according the color of the car.

2.4 Math functions

Some useful mathematical functions that will be used in the Matrixed application are the Fourier series, Laplace Matrices and 3D Vector processing.
Matrices will be used to manipulate the value of the planes of each cell in the matrix. In each cell there are 4 values assigned to each plane. Each plane represents an ARGB (alpha, red, green, blue) value. These values will be manipulated to alter the color and brightness.

3 Installation Diagram

Figure 4, is the diagram illustrating the actual work environment and how the equipment will be setup to proceed in developing this project.
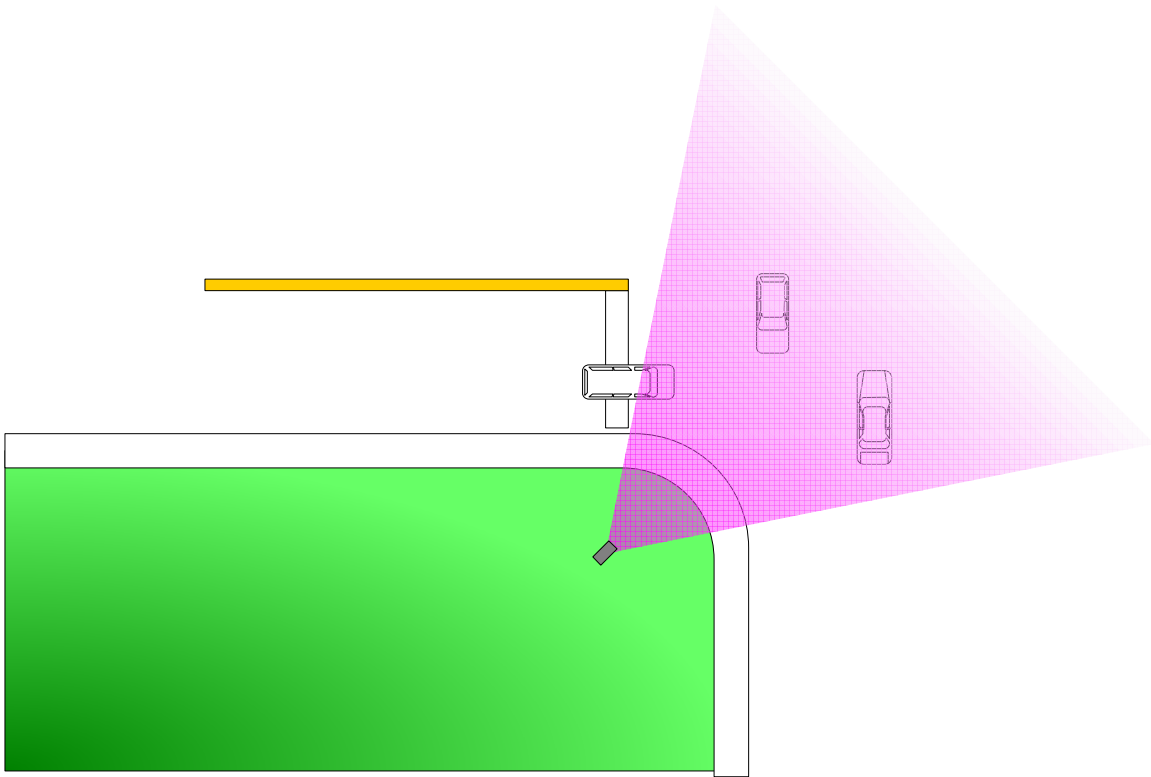
4 What is the functional, aesthetic or symbolic significance of your application?

The functional significance is to take a live video and change it into a cartoon and use it for special effects or commercial use (Figure 4). The Matrixed application applies special effects to live objects, making use of what we have learned within the course. Symbolically it can be used for entertainment, advertisement or commercials.

Figure 5, Make your life Green

5 How does it engage the human participant in live interaction

The human interacts with the Matrixed application by controlling the acceleration and speed of the car, the direction, and the destination (ie the environment) of the car.

When the driver speeds up or turns the sound volume increases according to the velocity of the movement.   The friction will be indicated by the sound patch within the application. The human can control the environment by choosing which environment to enter. When the car enters a new environment (Figure 5) then its color and sound will be altered to reflect this change in the environment setting.

Figure 6, Day becomes the Night

6 Milestones and Timetable

	Spiro	Maher	Islam	Sandy	Marika
Week 1	Getting cameras, Working on cartoon patch in Jitter with Maher	Documentation, & presentation, Getting cameras, & microphones, Working on cartoon patch in Jitter with Spiro	Get sounds Motion Patch with Sandy,	Documentation, & presentation, get camera, work on motion patch with Islam	Work on story boards and color patches in Jitter
Week 2	TBA				
Week 3	TBA				
Week 4	TBA				
Week 5	TBA				

7 Resources needed:

Hardware: Cameras(3), Monitor, TV, Computers, Microphone, Sound Recorder, Screen, Cables
Software: Max/Jitter, Visual C++, Open GL, Vision, Gimp