Looking Good

Qt Quick on the Raspberry Pi

Douglas Gore (@douggore)

What we will cover

Background

Introduction to Qt5 and QtQuick

Simple game

Particle effect

Presentation system

Some cool demos

A tale of two processors

Pi Processors

CPU: ARM1176JZF-S 700Mhz

OS, general processing

GPU: Broadcom VideoCore IV 250Mhz

Video decoding, video encoding, audio decoding, 3D graphics, camera capture and processing

0.6 GFLOPS

BETTER
THAN
THIS
7.3 GFLOPS
6.2 GFLOPS

BETTER
THAN
THIS
11 GFLOPS
4.8 GFLOPS

16 GFLOPS

24 GFLOPS

http://kyokojap.myweb.hinet.net/gpu_gflops/

http://www.raspberrypi.org/help/faqs/

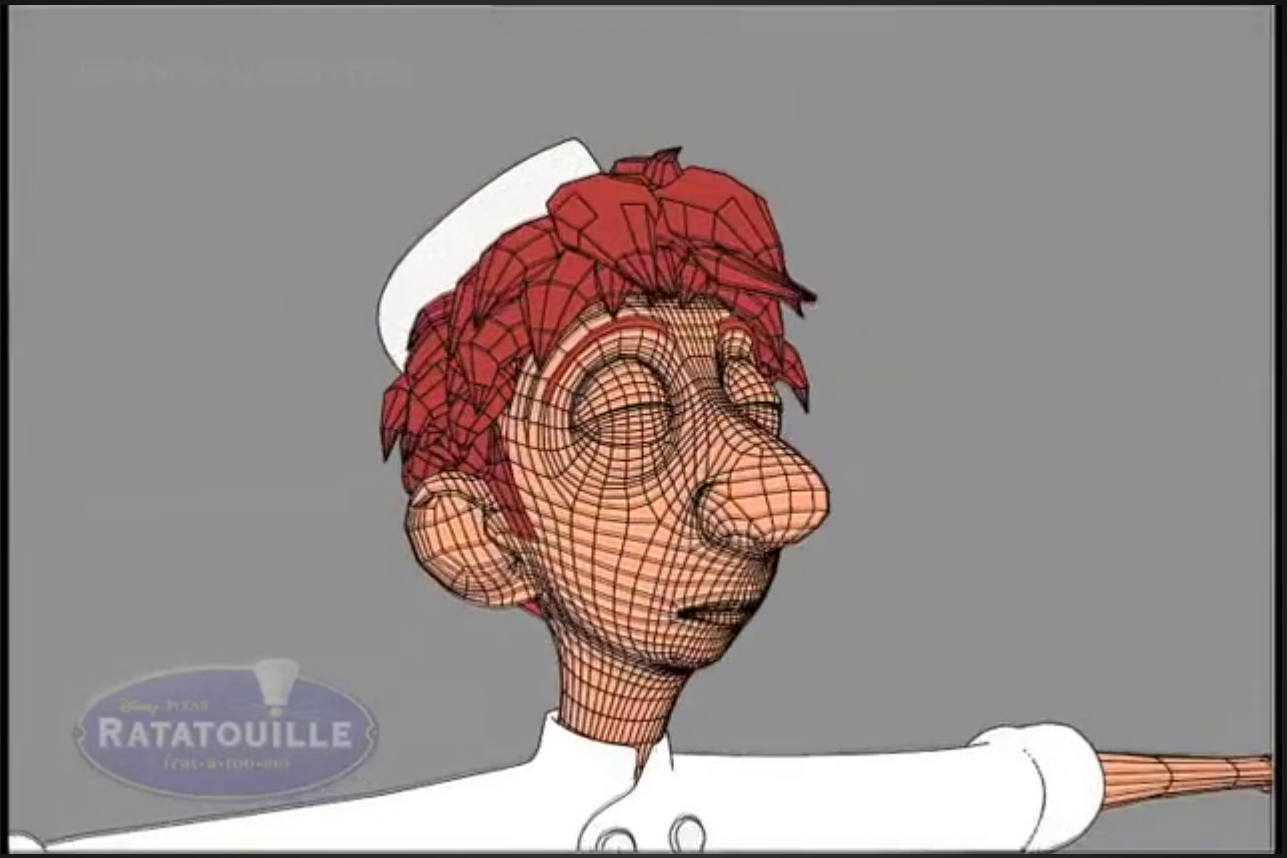
Why so slow?

Media processor

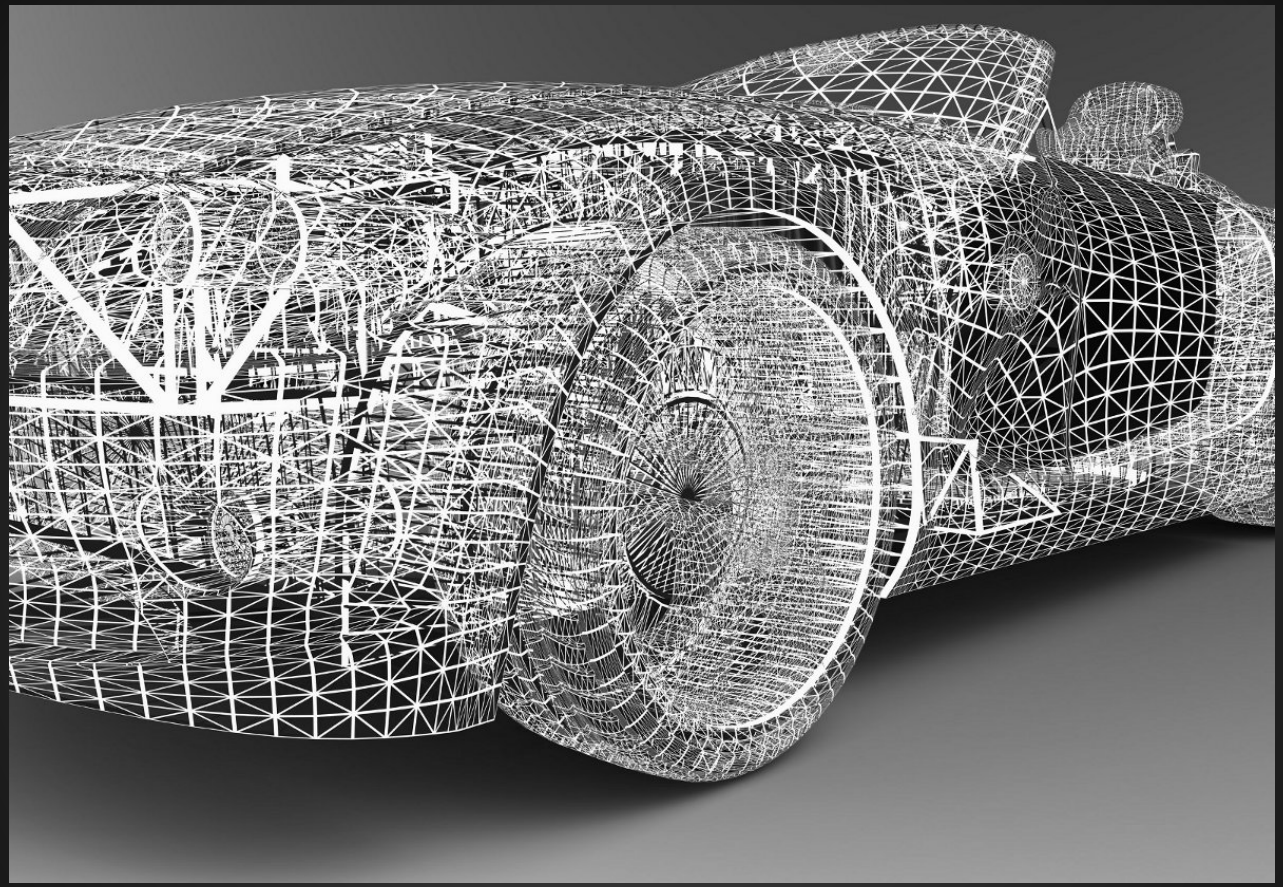
Just add CPU to get Pi

I want the power

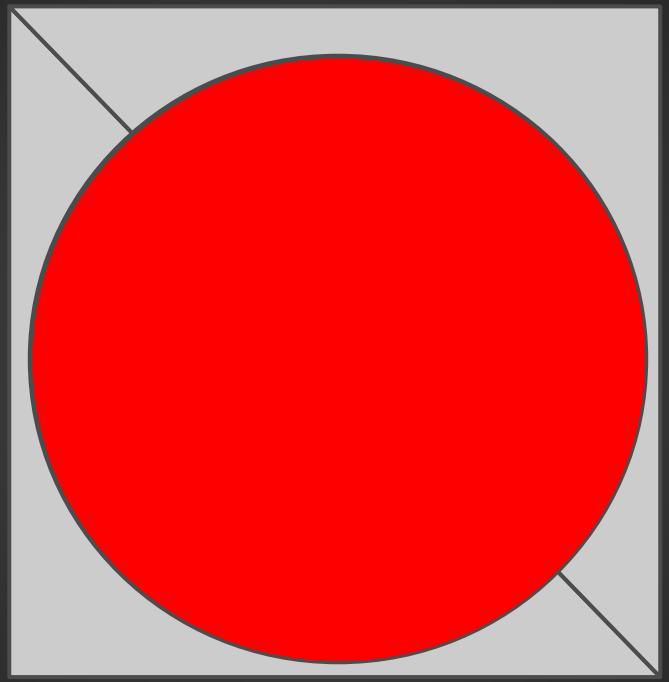
Triangles and Shaders



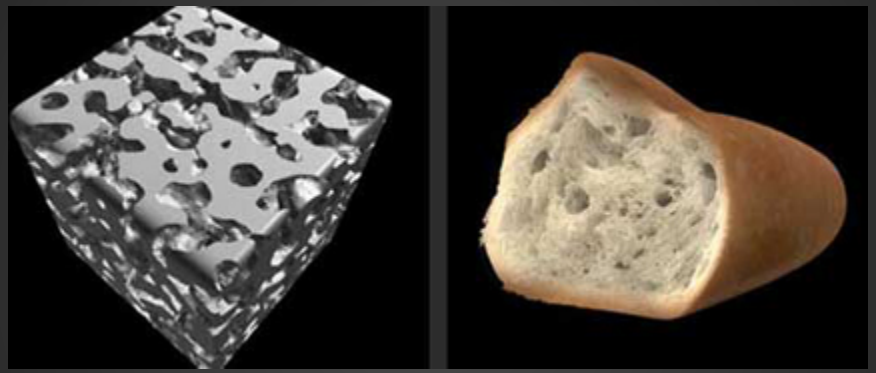
Wireframe mesh of Linguini from Ratatouille



Wow that’s a lot of triangles!



Hypertexture shader from Ratatouille



Hypertexture + some extras = baguette

Simple fragment shader

```
void main(void)
{
    gl_FragColor = vec4(0.0, 1.0, 0.0, 1.0);
}
```

GREEN

Vector

Looks complicated?

Don’t worry

Introducing Qt 5

What is Qt5?

- A huge multi-platform system for software development
- Originally C++ and fairly low level but now offers Qt Quick (QML) and JavaScript
- Qt Quick 2 uses OpenGL (GPU) for sophisticated, fast graphics

How to install

Qt 4.8 is part of Raspbian Wheezy

Qt 5.2.1 will be in Raspbian Jessie

Compile from source

Twolife.be pre-built packages for Qt 5.2.0

Installing the twolife.be packages

Note: there could be some side effects or compatibility issues

sudo pico /etc/apt/sources.list

deb http://twolife.be/raspbian/ wheezy main backports

sudo apt-key adv --keyserver keyserver.ubuntu.com --recv-key 2578B775

Installing Qt5 continued...

sudo apt-get update

sudo apt-get install qt5-default libqt5qml-graphicaleffects libqt5quickparticles5 qtdeclarative5-qtquick2-plugin qtdeclarative5-window-plugin qtdeclarative5-particles-plugin qmlscene

Continued again...

```
sudo ln -fs /opt/vc/lib/libEGL.so /usr/lib/libEGL.so
sudo ln -fs /opt/vc/lib/libEGL.so /usr/lib/arm-linux-gnueabihf/libEGL.so
sudo ln -fs /opt/vc/lib/libEGL.so /usr/lib/arm-linux-gnueabihf/libEGL.so.1
sudo ln -fs /opt/vc/lib/libEGL_static.a /usr/lib/libEGL_static.a
sudo ln -fs /opt/vc/lib/libEGL_static.a /usr/lib/arm-linux-gnueabihf/libEGL_static.a
sudo ln -fs /opt/vc/lib/libGLESv2.so /usr/lib/libGLESv2.so
sudo ln -fs /opt/vc/lib/libGLESv2.so /usr/lib/arm-linux-gnueabihf/libGLESv2.so
sudo ln -fs /opt/vc/lib/libGLESv2.so /usr/lib/arm-linux-gnueabihf/libGLESv2.so.2
sudo ln -fs /opt/vc/lib/libGLESv2_static.a /usr/lib/libGLESv2_static.a
sudo ln -fs /opt/vc/lib/libGLESv2_static.a /usr/lib/arm-linux-gnueabihf/libGLESv2_static.a
sudo ln -fs /opt/vc/lib/libbcm_host.so /usr/lib/libbcm_host.so
sudo ln -fs /opt/vc/lib/libbcm_host.so /usr/lib/arm-linux-gnueabihf/libbcm_host.so
sudo ln -fs /opt/vc/lib/libvchiq_arm.a /usr/lib/libvchiq_arm.a
sudo ln -fs /opt/vc/lib/libvchiq_arm.a /usr/lib/arm-linux-gnueabihf/libvchiq_arm.a
sudo ln -fs /opt/vc/lib/libvchiq_arm.so /usr/lib/libvchiq_arm.so
sudo ln -fs /opt/vc/lib/libvchiq_arm.so /usr/lib/arm-linux-gnueabihf/libvchiq_arm.so
sudo ln -fs /opt/vc/lib/libvcos.a /usr/lib/libvcos.a
sudo ln -fs /opt/vc/lib/libvcos.a /usr/lib/arm-linux-gnueabihf/libvcos.a
sudo ln -fs /opt/vc/lib/libvcos.so /usr/lib/libvcos.so
sudo ln -fs /opt/vc/lib/libvcos.so /usr/lib/arm-linux-gnueabihf/libvcos.so
```

...or use my script

Get the code from GitHub

```
git clone git://github.com/DougGore/cardiffjam.git
cd cardiffjam
chmod a+x install_qt5.sh
./install_qt5.sh
```

Wait a few minutes

Some QML

```
import QtQuick 2.0

Rectangle
{
    width: 1280
    height: 720

    Rectangle
    {
        anchors.centerIn: parent
        width: 256
        height: 256
        color: "blue"
    }
}
```

Bring in the features you need

Object type

Attributes

Examples

Code

github.com/DougGore/cardiffjam

Thank you

Any questions?