Canola – Application and Framework

diving into canola's extensible rich gui framework

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agenda

- introduction and history
- canola’s general overview
- tutorial of a simple plugin
- canola’s future
- google summer of code results

introduction

history

- 1991: clipper text ui
- 1998: tcl/tk — internet!
- 1999: perl cgi-bin
- 2000: gtk, qt
- 2001: php — universtiy: infinite time + smart people around!
- 2002: freevo (pygame)
- 2003: turbogears, django, zope
- 2006: canola1 (sdl, gobject, c) — indt!
- 2007: canola2 (python-efl)
- 2009: memphis — profusion!

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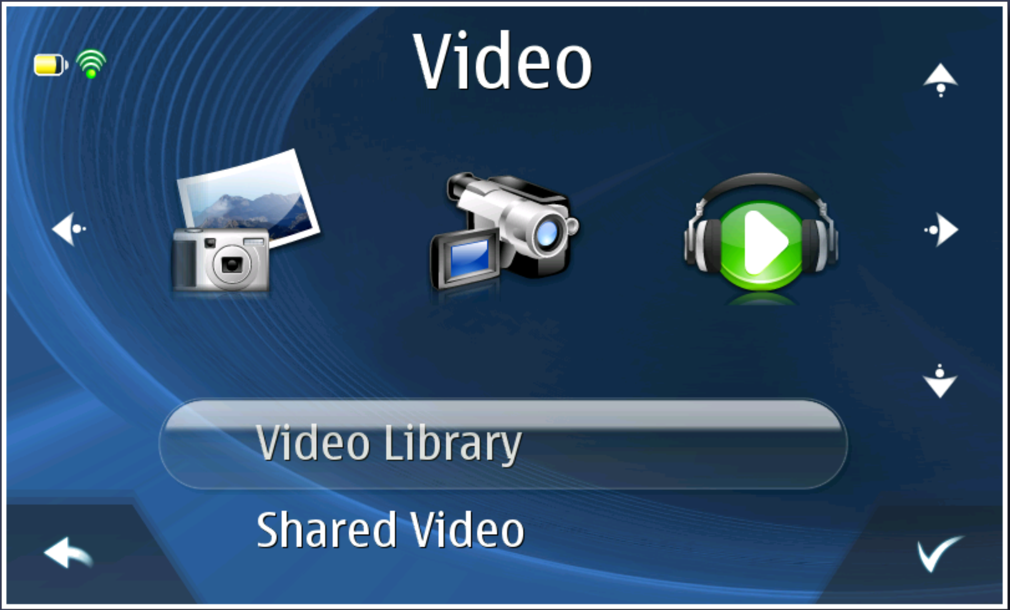
freevo

- first contact with python — after perl, gotta love it!
- first gui architecture
- heavy usage of xml to describe ui — ouch!
- lots ot time to play and experiement technologies


Video
Video Library
Shared Video

canola1

- excellent concept designed by marcelo (handful)
- joined the project late
- took over technical leadership

- unfortunately closed source and dead

canola1 pains

- low level graphics with sdl
- abusing c:
    - object orientation
    - introspection
    - callbacks
- manual reference counting

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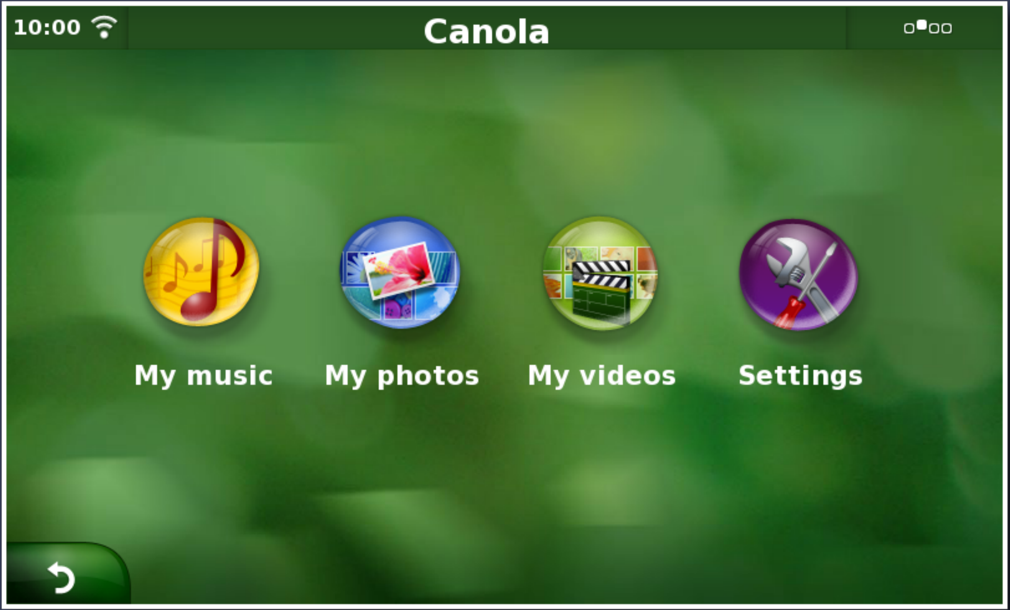
canola1 was not just pain

- graphics looked great
- user experience was awesome
- people liked it — created a community even being closed!

- excellent model-view-controller (mvc) usage
- **excellent mvc-based plugin system!**


10:00
Canola
My music
My photos
My videos
Settings

canola2 requirements

- even more animations — and thus callbacks!
- even more features — then code and so objects!
- 3rd party extensible — you may not be as careful!
- and do it all in 4 months… — more LoC = more time!

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canola2 solutions

- **python:** just a high level language would do it
- **evas:** required a powerful **and fast** canvas
- **edje:** first overlooked, then our salvation
- **helpers:** atabake and canolad were based on canola1 — proved very useful
- **model-view-controller:** similar to canola1, but improved
- **plugins:** similar to canola1

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canola processes

- **atabake:** plays media — and keeps licensing problems away
- **downloadmanager:** downloads stuff from internet, with resume support
- **canola-thumbnailer:** thumbnail generator
- **canolad:** maintains media database, monitors and scans media
- **canola:** graphical user interface

general gui overview

- canola itself is just a terra-plugin launcher
- given a **model**, returns a handler **controller** that loads a **view**
- similar to mime-types and their handlers
- special `MainController` acts like operating system kernel
- **task:** main entry point, like OS processes
- all in **one** process, so everything must be **cooperative**!
- tasks offload heavy or blocking operations to other processes
- avoids requirements for composite manager, thus fast rendering

canola, terra, getting confused!

- legal and licensing, again...
- terra (same as soil in portuguese) provides the framework
- canola is one application — maybe would remain closed

- stupid analogy “canola (oil) comes from terra (soil)”

terra overview

- **core:** mvc base, plugin loader, manager and task
- **ui:** lists, grid, screen and other widgets
- **utils:** misc stuff that did not fit elsewhere

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plugin loading

- ask `terra.core.Manager` by `terra_type` filter or regular expression
- regular expression enables fancy queries
  - give me all plugins that begin with “`Model/Status/`”
- filter will try fallbacks
  - give the controller that handles “`Model/Media/Audio/Local`”
  - tries “`Controller/Media/Audio/Local`”
  - or fallback to “`Controller/Media/Audio`”
  - or fallback to “`Controller/Media`”
  - or fallback to “`Controller`”
  - or fail!
- fallbacks are important to provide generic code and allow extensions
- plugins must inherit from `terra.core.terra_object.TerraObject`

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plugin loading, continued

- plugin directory specified in `/etc/canola.conf`
- plugins specified as a directory or zip file
- plugins provides meta information in `plugins.info` (ini format)
    - section name defines plugin name (used to enable/disable)
    - `modname:` python module access (ie: iradio.model)
    - `enabled:` boolean that provides default value
    - `rank:` sort/priority order
    - `filter_map:` list (one per line) with `terra_type - class`

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tutorial: create your simple plugin

bootstrap

```
user$  mkdir urlbookmark
user$  mkdir urlbookmark/urlbookmark
user$  touch urlbookmark/__init__.py
user$  touch urlbookmark/urlbookmark/__init__.py
```

create your model (1/4)

$EDITOR urlbookmark/urlbookmark/model.py

```
from terra.core.manager import Manager
from terra.core.task import Task
from terra.core.model import ModelFolder, Model

manager = Manager()
```

import required modules and acquire the manager singleton

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create your model (2/4)

```
PluginDefaultIcon = manager.get_class(”Icon/Plugin”)
class Icon(PluginDefaultIcon):
    terra_type = ”Icon/Folder/Task/Audio/URLBookmark”
    icon = ”icon/main_item/music”
```

- `terra_type` must match `Folder.terra_type` (s/Model/Icon/)
- `icon` defines edje group to use.

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create your model (3/4)

```
class Folder(ModelFolder, Task):
    terra_type = ”Model/Folder/Task/Audio/URLBookmark”
   terra_task_type = ”Task/Folder/Task/Audio/URLBookmark”

    def __init__(self, parent):
        Task.__init__(self)
       ModelFolder.__init__(self, ”URLBookmark”, parent)

    def do_load(self):
        for u in (”url1”, ”url2”, ”url3”):
            URLBookmark(u, self)
```

`ModelFolder.do_load()` is called on first `ModelFolder.load()`

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create your model (4/4)

```
AudioModel = manager.get_class(”Model/Media/Audio”)
class URLBookmark(AudioModel):
    terra_type = ”Model/Media/Audio/URLBookmark”

    def __init__(self, url, parent):
        AudioModel.__init__(self, url, parent)
        self.title = url
        self.uri = url
```

set common properties used by media player

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explain your plugin

$EDITOR urlbookmark/plugins.info

```
[URLBookmark Model]
modname = urlbookmark.model
enabled = True
rank = 255
filter_map = Icon/Folder/Task/Audio/URLBookmark - Icon
             Model/Folder/Task/Audio/URLBookmark - Folder
```

have canola/terra to know about it

```
user$  cp urlbookmark /usr/share/canola/plugins
user$  terra-rescan-collections -c /etc/canola.conf
user$  terra-list-plugins -c /etc/canola.conf
```

terra parses plugins.info and compiles optimized meta information in plugins.pickle

adding your own view

- create your own controller that creates your custom view
- view uses `terra.ui.screen.Screen`
- no need to write everything: inherit from similar classes

canola’s future

canola's future

- it's mostly ready, but **needs work:**
  - refactor of some code (media players screens)
  - improvements to notification area
  - documentation
  - more plugins!
- improve applications use the same base:
  - memphis, in-car entertainment
  - carman
  - needs more!

we need more developers!

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attracting more developers

- talk at events (may use this talk as base)
- offer mentoring (gsoc)
- help improve and integrate more plugins

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gsoc results

google summer of code

successful thanks to effort of mentors and their students:

etrunko
(twitter)

lfelipe
(torrent)

glima
(picasa)

antognolli
(im)

Ryback_
(rtm)

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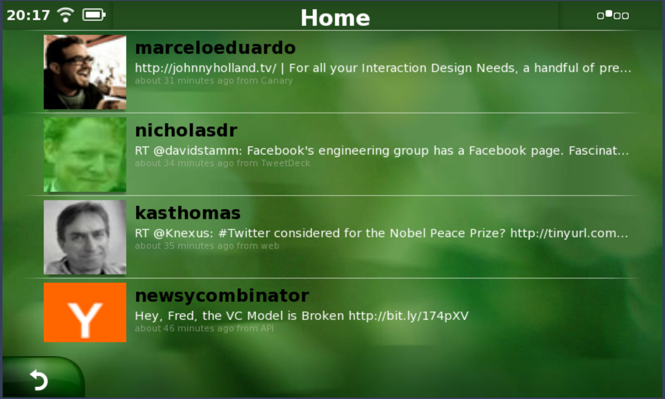
twitter plugin



20:17

Home

marceloeduardo
http://johnnyholland.tv/ | For all your Interaction Design Needs, a handful of pre...
about 31 minutes ago from Canary

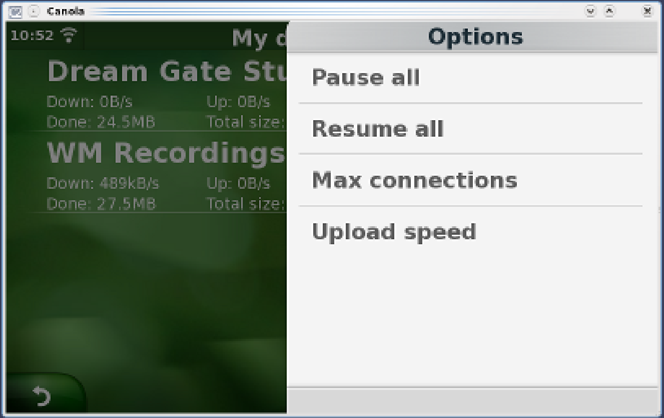
nicholasdr
RT @davidstamm: Facebook's engineering group has a Facebook page. Fascinat...
about 34 minutes ago from TweetDeck

kasthomas
RT @Knexus: #Twitter considered for the Nobel Peace Prize? http://tinyurl.com...
about 35 minutes ago from web

newsycombinator
Hey, Fred, the VC Model is Broken http://bit.ly/174pXV
about 46 minutes ago from API

student: Kasun Herath
mentor: Eduardo Lima (etrunko)

torrent plugin


Canola

10:52

My d

Dream Gate Stu

Down: 0B/s Up: 0B/s

Done: 24.5MB Total size:

WM Recordings

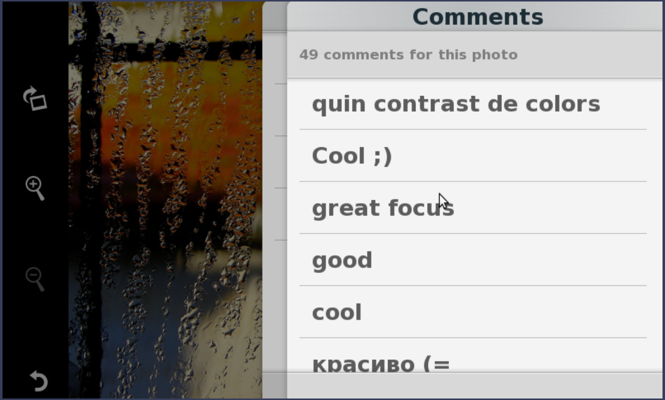
Down: 489kB/s Up: 0B/s

Done: 27.5MB Total size:

student: Lauri Vosandi

mentor: Luís Felipe Strano Moraes (lfelipe)

picasa plugin



Comments

49 comments for this photo

quin contrast de colors

Cool ;)

great focus

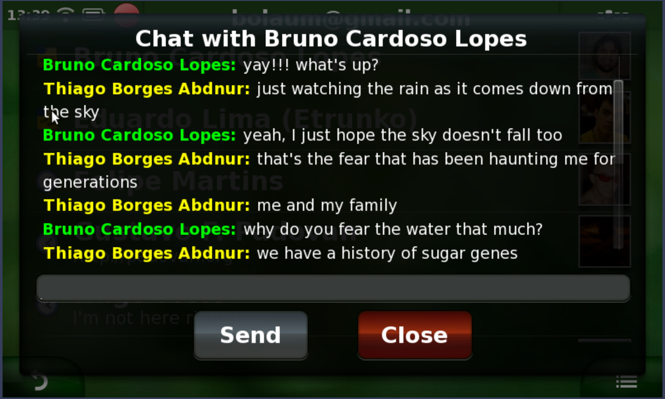
good

cool

красиво (=

student: Andrei Mirestean
mentor: Gustavo Lima Chaves

instant messenger plugin

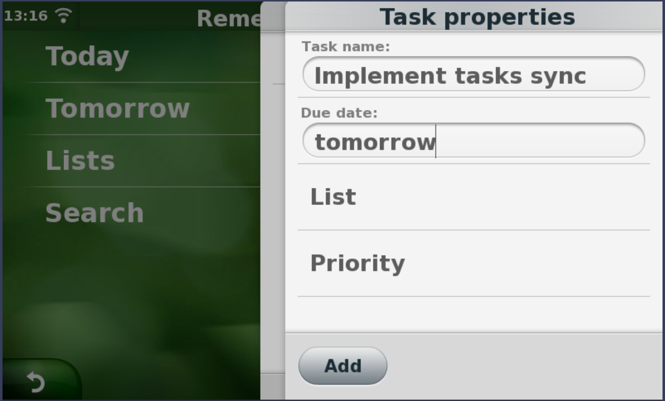


Chat with Bruno Cardoso Lopes

Bruno Cardoso Lopes: yay!!! what's up?
Thiago Borges Abdnur: just watching the rain as it comes down from the sky
Bruno Cardoso Lopes: yeah, I just hope the sky doesn't fall too
Thiago Borges Abdnur: that's the fear that has been haunting me for generations
Thiago Borges Abdnur: me and my family
Bruno Cardoso Lopes: why do you fear the water that much?
Thiago Borges Abdnur: we have a history of sugar genes

student: Thiago Borges Abdnur (bolaum)
mentor: Rafael Antognolli

remember the milk plugin



Task name: Implement tasks sync

Due date: tomorrow

student: Andrey Popelo
mentor: Ulisses Furquim (Ryback_)

thanks!

Gustavo Sverzut Barbieri

meet me outside for more about graphics, gui, canola, linux, embedded, mobiles, profusion... **beers!**

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http://profusion.mobi/

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