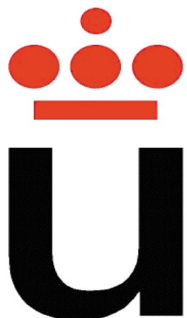


Dr. Scratch

Automatic analysis of Scratch projects to
assess the development of CT

Scratch Conference, Boston 2014

Jesús Moreno, Gregorio Robles, Cristian Chusig

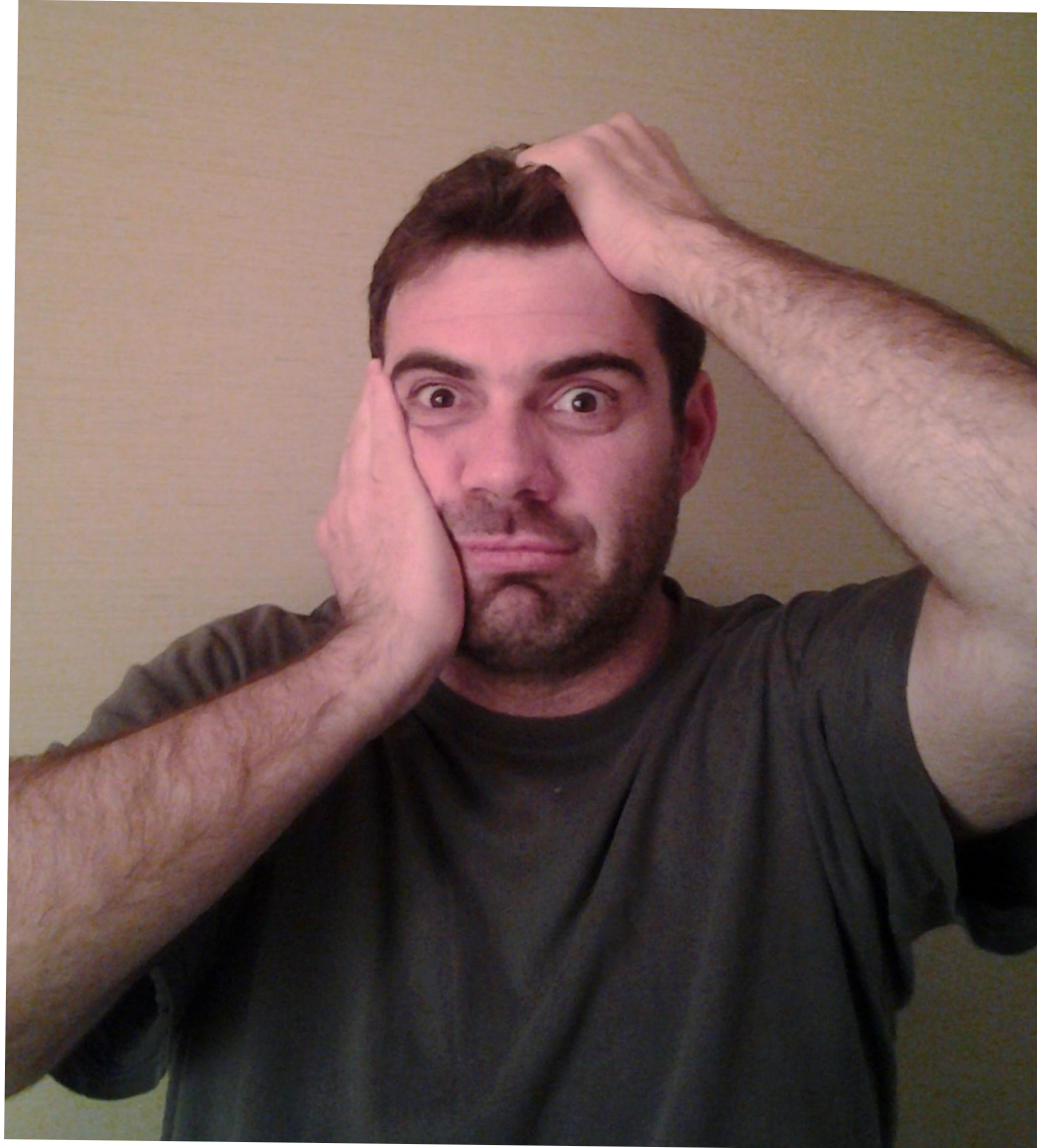


Universidad
Rey Juan Carlos



Why automatic analysis?

Why automatic analysis?



Why automatic analysis?



```
Global evaluation
```

```
-----
```

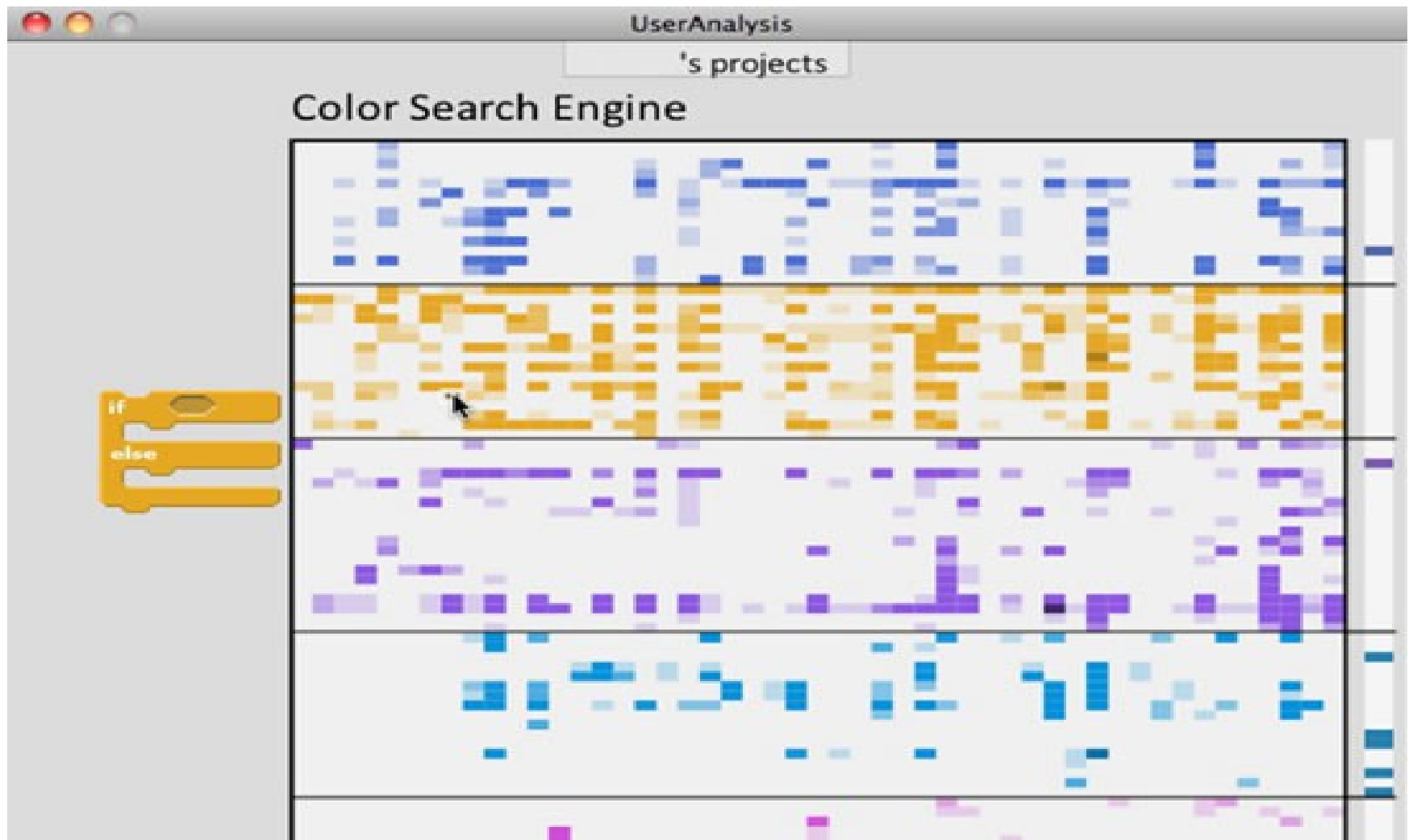
```
Your code has been rated at 9.41/10
```

```
Raw metrics
```

```
-----
```

type	number	%	previous	difference
code	115	64.61	NC	NC
docstring	40	22.47	NC	NC
comment	4	2.25	NC	NC
empty	19	10.67	NC	NC

Scrape

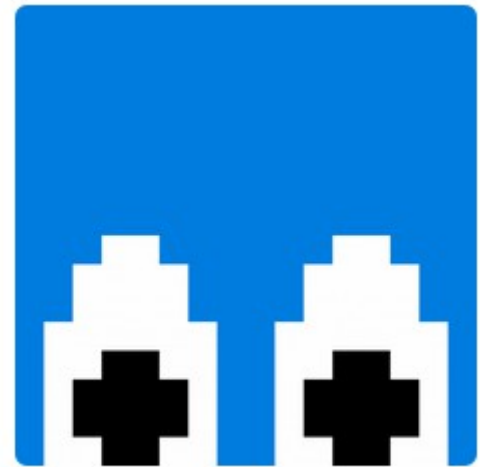


Hairball

- **Hairball**
 - A plugin-able framework for static analysis of Scratch projects.
 - <https://github.com/ucsb-cs-education/hairball>
- **Kurt**
 - A library which allows complex manipulation of Scratch project files via simple Python commands.
 - <https://github.com/blob8108/kurtc>




Bryce Boe
bboe



blob8108

Dr. Scratch

Dashboard Overview

 Dashboard

Welcome to Doctor Scratch. The analysis about your project.



13
Scoring

Your level: **Developing**

Dr. Scratch


CT Score in detail:


Concept↕	Points↕
CT global score	12
Abstraction	2
Parallelization	1
Logic	1
Synchronization	2
FlowControl	2
UserInteractivity	2
DataRepresentation	2


Dr. Scratch

CT concept	Basic	Developing	Proficiency
Parallelization	2 scripts on green_flag	2 scripts on key_pressed, 2 scripts on sprite_clicked on the same sprite	2 scripts on when_I_recieve_message , create_clone, 2 scripts when_%s_is_>_%s, 2 scripts on when_backdrop_change_to
Synchronization	wait	Broadcast, when_I_receive_message , stop_all, stop_program,stop_programs_sprite	wait_until, when_backdrop_change_to, when_I_start_as_clon, broadcast_and_wait
Data representation	Modifiers of properties of sprites	Operations on vars	Operations on lists
Conditional logic	if	if_else	logic operations
Interactivity (UI)	Green_flag	key_pressed, sprite_clicked, ask_and_wait, mouse blocks	when_%s_is_>_%s, video, audio
Algorithmic notions of flow control	Sequence of blocks	Repeat, Forever	repeat_until
Abstraction and problem decomposition	> 1 scripts	> 1 scripts and > 1 sprites	def_block


Dr. Scratch

 4
Duplicated Scripts


[View Mentions](#) 

 4
Sprites naming

- ✓ Incorrect name: Sprite1
- ✓ Incorrect name: Sprite4
- ✓ Incorrect name: Sprite3
- ✓ Incorrect name: Sprite2

 2
Dead Code

- ✓ u'Sprite2' with 76 blocks
- ✓ 'Stage' with 30 blocks

 1
Sprite atributes initialization

- ✓ Sprite2: orientation, position, modified but not initialized correctly

(Not available in the alpha version online)

Dr. Scratch

- Bugs:
 - Dead code
 - Messages
 - Attributes initialization
- Issues:
 - Code repetition
 - Sprite naming

Dr. Scratch

The image displays two Scratch script blocks side-by-side. The left block starts with a 'when green flag clicked' event, followed by a 'hide' block, and a 'forever' loop containing an 'if touching Sprite14?' block with 'go to Sprite12' and 'show' blocks. The right block is identical but includes a 'mouse-pointer' block and an 'edge' block within the 'if' block's 'then' clause. Below the scripts is a 'Sprites' palette with a grid of 25 sprite thumbnails labeled Sprite1 through Sprite13. A blue dropdown menu is open over the right script, listing the same 25 sprite names.

when green flag clicked

hide

forever

if touching Sprite14? then

go to Sprite12

show

when green flag clicked

hide

forever

if touching Sprite14? then

mouse-pointer

edge

Sprite10

Sprite11

Sprite12

Sprite13

Sprite14

Sprite2

Sprite24

Sprite24

Sprite25

Sprite26

Sprite27

Sprite28

Sprite29

Sprite29

Sprite3

Sprite30

Sprite31

Sprite32

Sprite34

Sprite35

Sprite36

Sprite36

Sprite37

Sprite37

Sprite38

Sprite38

Sprite9

Sprite12

Sprite13

Dr. Scratch

Two Scratch code blocks are shown side-by-side. The left block starts with a 'when I receive message1' block, followed by a 'set rotation style left-right' block. A 'repeat 10' loop contains three blocks: 'move 2 steps', 'next costume', and 'if on edge, bounce', followed by a 'wait 1 secs' block. The right block starts with a 'when I receive message2' block, followed by a 'set rotation style left-right' block. A 'repeat 5' loop contains three blocks: 'move 4 steps', 'next costume', and 'if on edge, bounce', followed by a 'wait 0.5 secs' block.

Two Scratch code blocks are shown side-by-side. The left block is a 'define walk repetitions steps pause' block. Below it is a 'set rotation style left-right' block. A 'repeat repetitions' loop contains four blocks: 'move steps steps', 'next costume', 'if on edge, bounce', and 'wait pause secs'. The right block consists of two 'when I receive' blocks. The first is 'when I receive message1' followed by a 'walk 10 2 1' block. The second is 'when I receive message2' followed by a 'walk 5 4 0.5' block.

Dr. Scratch

<http://drscratch.programamos.es>

Doctor Scratch (alpha version)

Username Password

Dr. Scratch (alpha version)

Analyze your Scratch projects here!

Welcome to the Dr. Scratch website, an analytical tool that evaluates your Scratch projects in a variety of computational areas. We provide feedback on aspects such as abstraction, logical thinking, synchronization, parallelization, flow control, user interactivity and data representation.

This analyzer is a helpful tool to evaluate your own projects, or those of your Scratch students.

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