The Future of Python: A Choose Your Own Adventure

Jessica McKellar

Kiwi PyCon 2013

It's nice to be popular

GitHub

JavaScript	491,172
Ruby	420,759
Java	328,151
Python	247,070
PHP	241,925
C	129,235
C++	121,835

Repositories 247,070

<> Code 10,215,531

① Issues 675,018

👤 Users 113,158

https://github.com/search?q=language%3Apython

PyPL
Popularity of Language Index

Position Sep 2013	Position Sep 2012	Delta in position	Programming language	Share in Sep 2013	Twelve month trends
1	1		Java	27.0 %	-1.2 %
2	2		PHP	13.9 %	-0.0 %
3	3		C#	10.0 %	+0.4 %
4	6	↑↑	Python	9.9 %	+1.7 %
5	4	↓	C++	9.0 %	-0.7 %
6	5	↓	C	8.5 %	-1.4 %
7	7		Javascript	7.1 %	+1.3 %
8	8		Objective-C	5.6 %	+0.4 %
9	9		Visual Basic	3.1 %	-0.6 %
10	10		Ruby	3.0 %	+0.2 %

https://sites.google.com/site/pydatalog/pypl/PyPL-PopularitY-of-Programming-Language

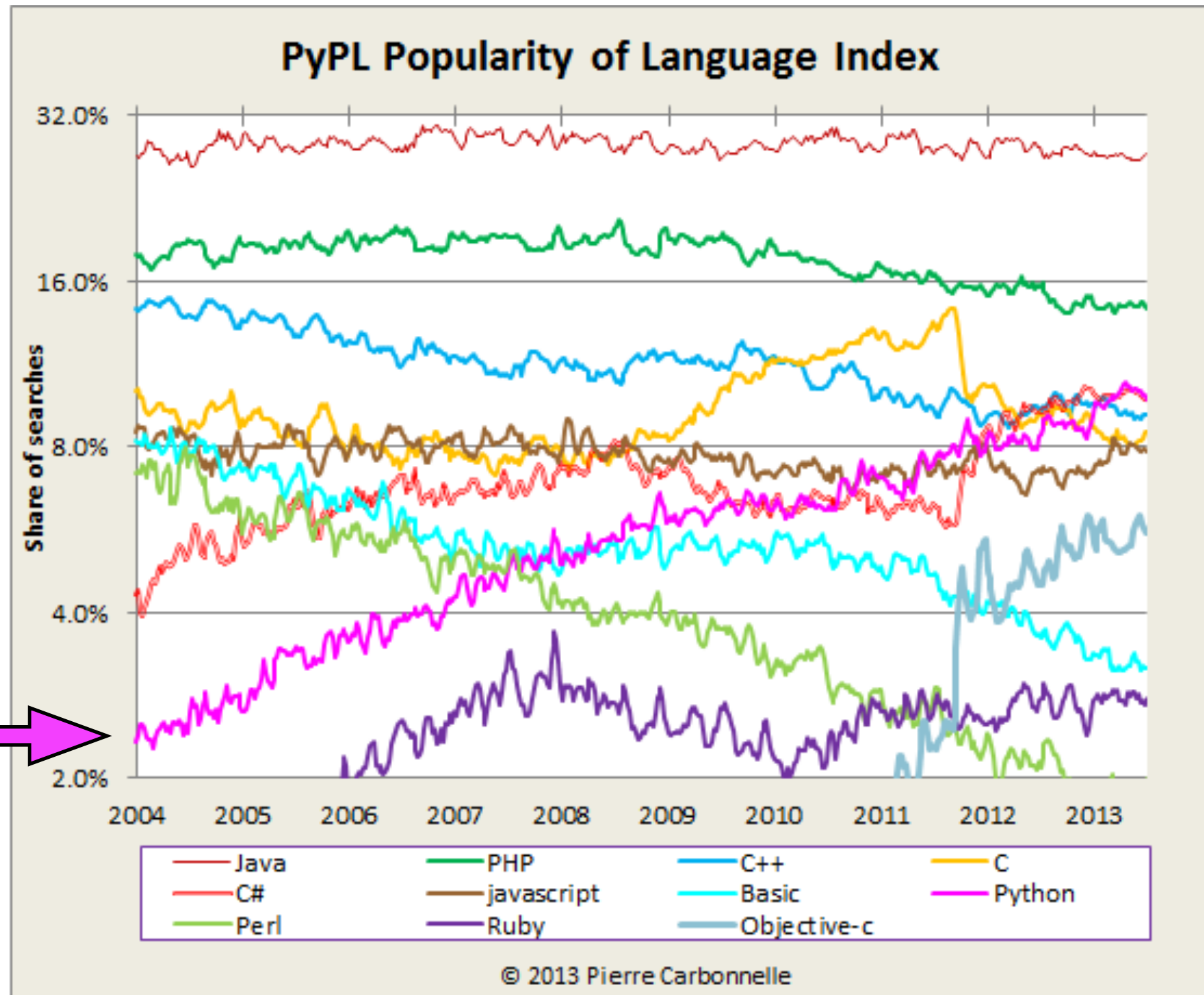# PyPL
Popularity of Language Index

PyPL
Popularity of Language Index

PyPL Popularity of Language Index

© 2013 Pierre Carbonnelle

PyPL
## Popularity of Language Index

PyPL Popularity of Language Index

© 2013 Pierre Carbonnelle

TIOBE

| Position Aug 2013	Position Aug 2012	Delta in Position	Programming Language	Ratings Aug 2013	Delta Aug 2012
1	2	⬆	Java	15.978%	-0.37%
2	1	⬇	C	15.974%	-2.96%
3	4	⬆	C++	9.371%	+0.04%
4	3	⬇	Objective-C	8.082%	-1.46%
5	6	⬆	PHP	6.694%	+1.17%
6	5	⬇	C#	6.117%	-0.47%
7	7	=	(Visual) Basic	3.873%	-1.46%
8	8	=	Python	3.603%	-0.27%
9	11	⬆⬆	JavaScript	2.093%	+0.73%
10	10	=	Ruby	2.067%	+0.38%
11	9	⬇⬇	Perl	2.041%	-0.23%

http://www.tiobe.com

TIOBE

http://www.tiobe.com
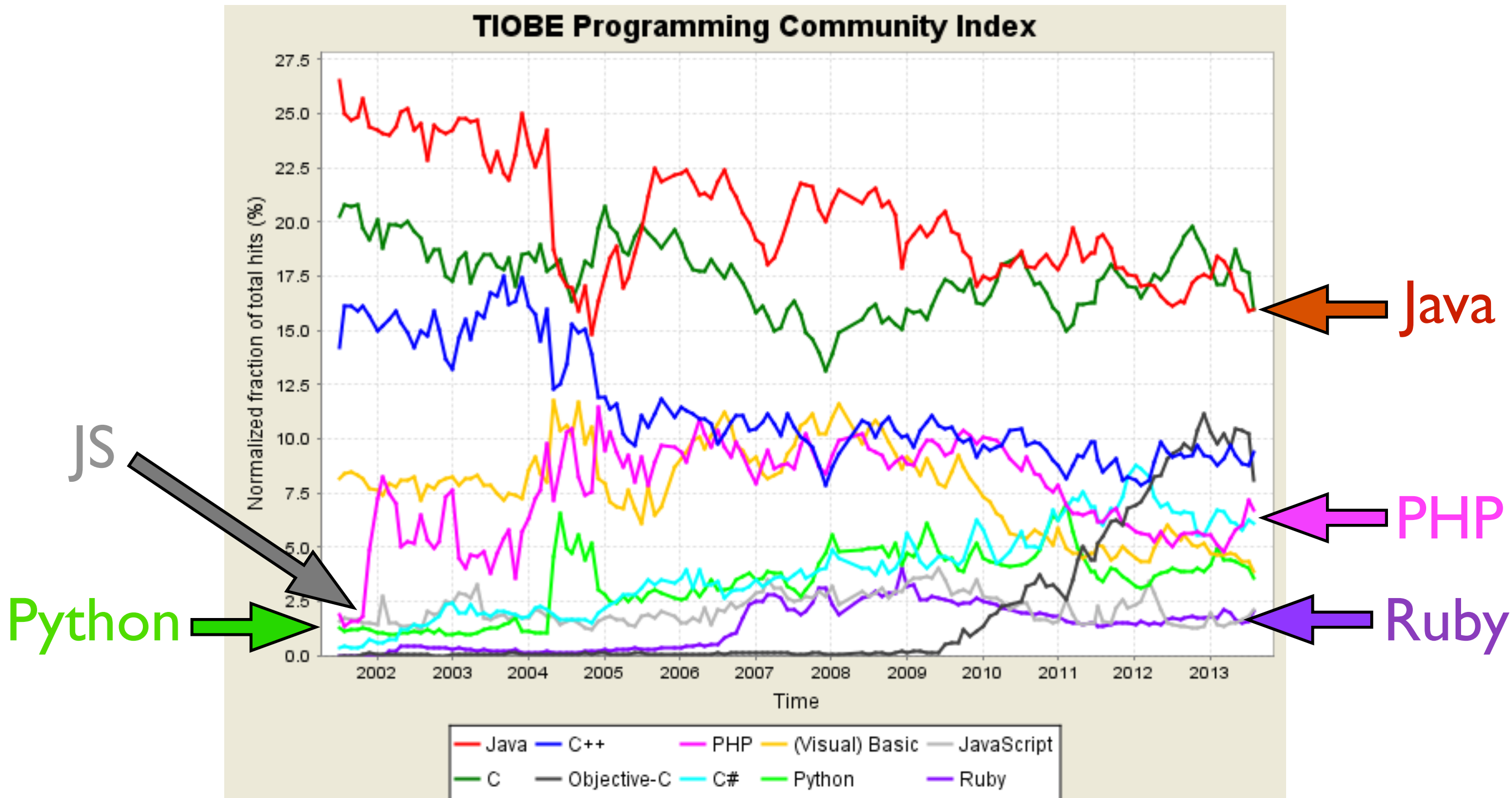
It's nice to be popular now. What about the future?

It's nice to be popular now.

What about the future?

- Windows

- Games

- Mobile

- Science
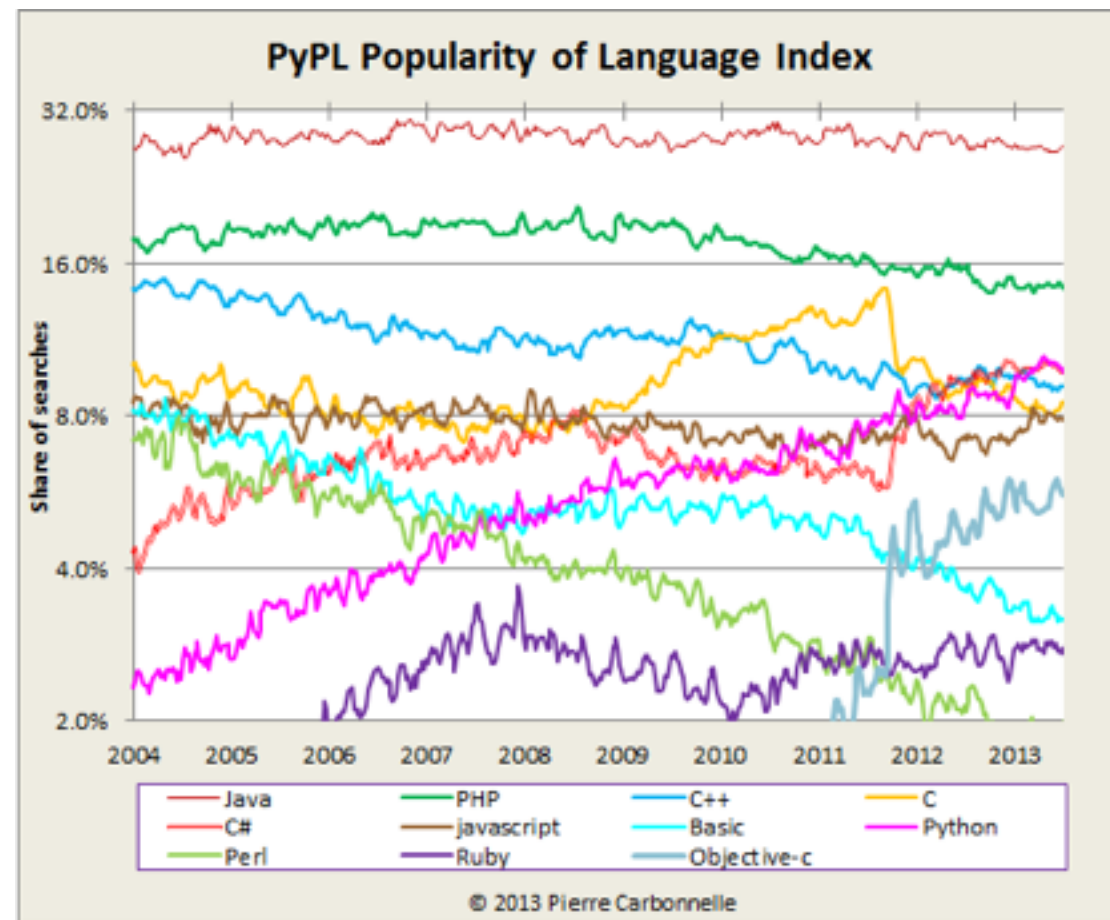
Learning to program in Python on Windows is _____.

Learning to program in Python on Windows is <u>complicated</u>.

Learning to program in Python on Windows is ~~confusing~~ .

Learning to program in Python on Windows is

<u>infuriating</u> .

Learning to program in Python on Windows is I give up :-(.

What we learned at **The Boston Python Workshop**

Prerequisites

- Installing Python, + Path on Windows

- Installing a text editor

- Basic command line navigation

- Practicing running Python code from a file

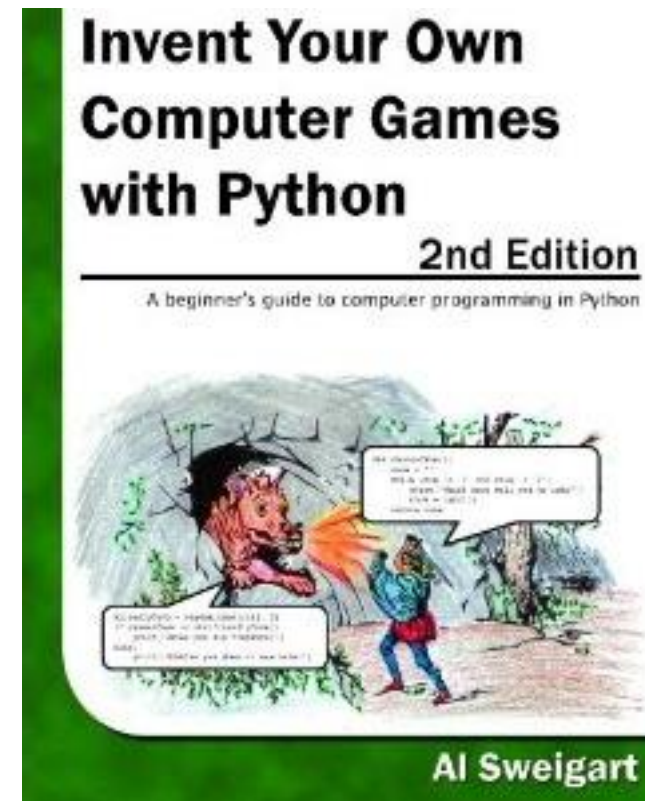- How to install Python libraries

And remember: no C compiler on Windows or OSX

What about:

- IDLE

- Enthought

- IPython notebook

- PyCharm

- ...

What about:

- IDLE

- Enthought

- IPython notebook

- PyCharm

- ...

What about:

- IDLE

- Enthought

- IPython notebook

- PyCharm

- ...

Al Sweigart, author of

Invent Your Own Computer Games with Python
2nd Edition
A beginner's guide to computer programming in Python

Making Games with Python & Pygame
A guide to programming with graphics, animation, and sound

Al Sweigart

Al Sweigart

"The Things I Hate About IDLE That I Wish Someone Would Fix"

What about:

Problem is, IDLE is not maintained by anyone. The couple of persons who will occasionally claim they *will* improve it "real soon now" generally don't do anything at all. Several people will yell, however, if you propose to kick it out of the standard library.

-- Python core dev Antoine Pitrou

Al Sweigart, author of

Invent Your Own Computer Games with Python
2nd Edition
A beginner's guide to computer programming in Python
Al Sweigart

Making Games with Python & Pygame
A guide to programming with graphics, animation, and sound
Al Sweigart

"The Things I Hate About IDLE That I Wish Someone Would Fix"

http://inventwithpython.com/blog/2011/11/29/the-things-i-hate-about-idle-that-i-wish-someone-would-fix/

What about:

Problem is, IDLE is not maintained by anyone. The couple of persons who will occasionally claim they *will* improve it "real soon now" generally don't do anything at all. Several people will yell, however, if you propose to kick it out of the standard library.

-- Python core dev Antoine Pitrou

Al Sweigart, author of

Invent Your Own Computer Games with Python
2nd Edition
A beginner's guide to computer programming in Python

Al Sweigart

Making Games with Python & Pygame
A guide to programming with graphics, animation, and sound

Al Sweigart

"The Things I Hate About IDLE That I Wish Someone Would Fix"

http://inventwithpython.com/blog/2011/11/29/the-things-i-hate-about-idle-that-i-wish-someone-would-fix/

Learning to program in Python on Windows is
delightful.

Stats

	Total	Windows
Bugs ever	30680	1142
Open bugs	4110	211
Contributors	41220	956

148 active committers

Stats

	Total	Windows
Bugs ever	30680	1142
Open bugs	4110	211
Contributors	41220	956

148 active committers

In the last **30 days**, **21 people** made
39 comments on **22 Windows tickets**

Learning to program in Python on Windows is <u>delightful</u>.
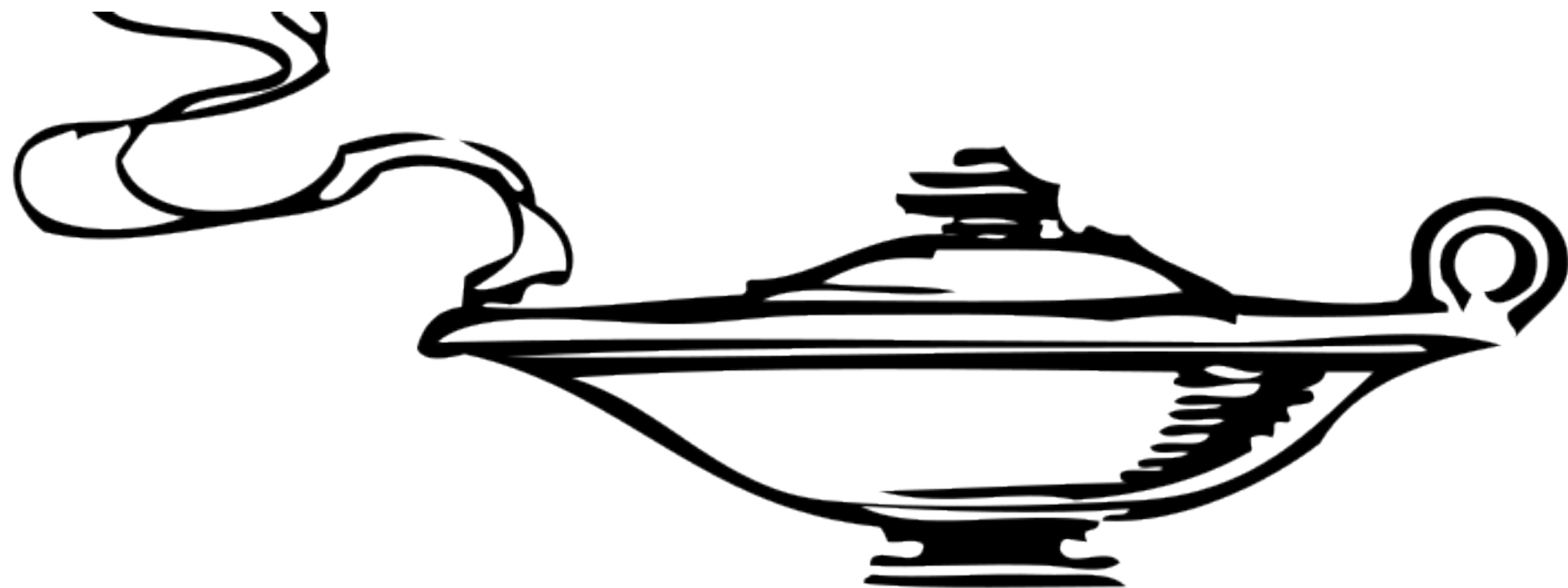
TAKE ANY ROAD YOU WANT.
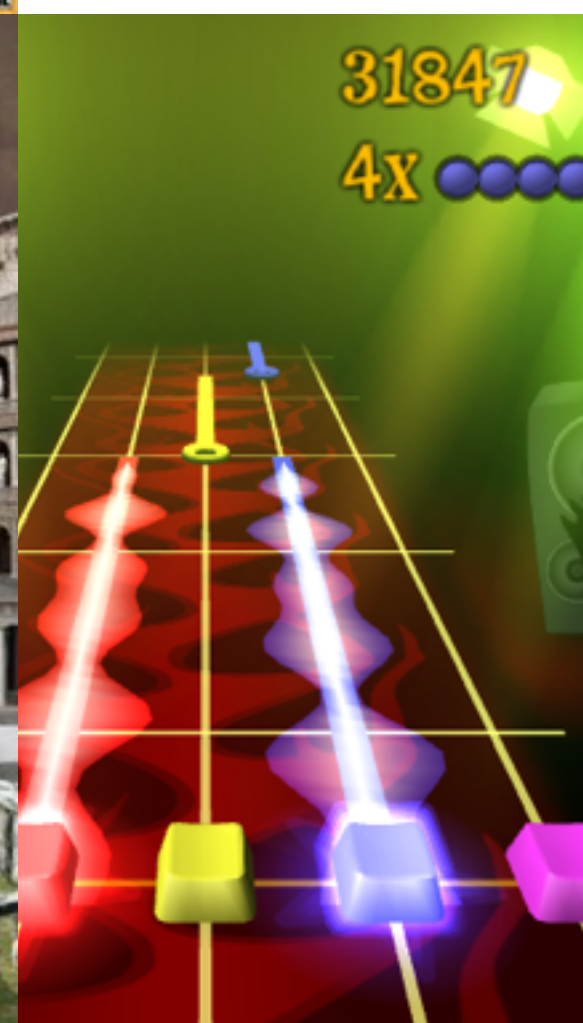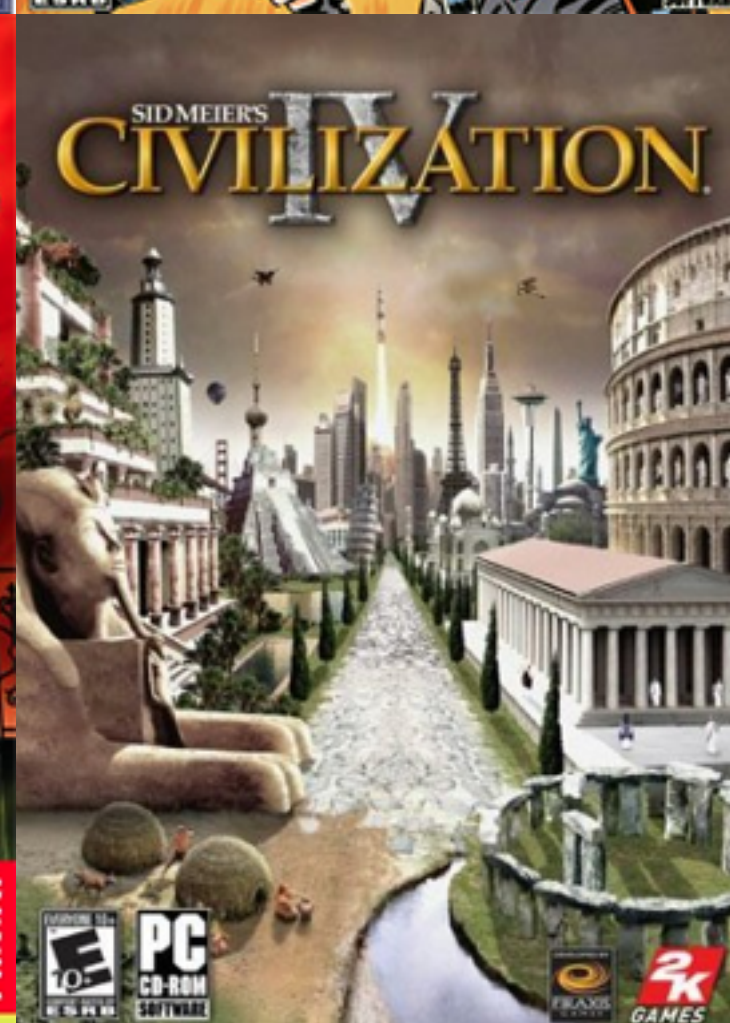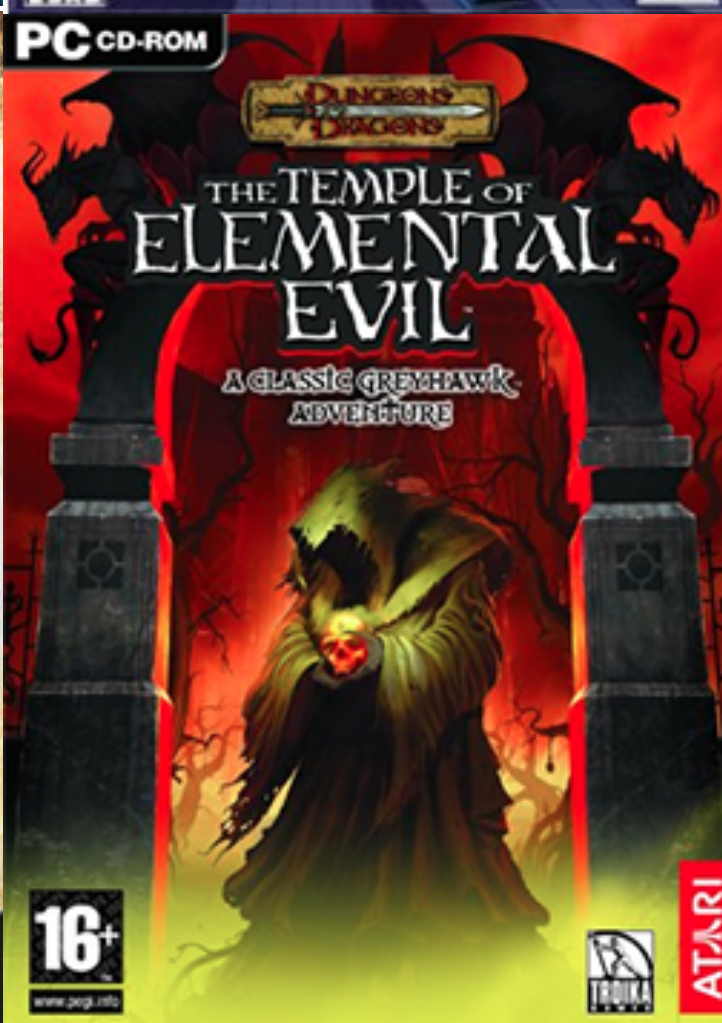
Why aren't more games developed in Python?

PC CD-ROM

Vampire THE MASQUERADE BLOODLINES

18+

ACTIVISION

FREEDOM FORCE

TEEN T

CRAVE

Games for Windows

FREEDOM FORCE vs THE 3rd REICH

FEATURING
STORY-BASED MULTIPLAYER
ALL NEW VILLAINS!

TEEN T

PC CD-ROM SOFTWARE

EVE ONLINE

ViS

PC DVD ONLY DVD COMPATIBLE

BATTLEFIELD 2

16+

EA GAMES

PC CD-ROM

DUNGEONS & DRAGONS
THE TEMPLE of ELEMENTAL EVIL
A CLASSIC GREYHAWK ADVENTURE

16+

TROIKA

ATARI

SID MEIER'S CIVILIZATION IV

PC CD-ROM SOFTWARE

2K GAMES

31847
4x

Ludum Dare

Competition Tips

1. To reach more participants, web entries are best (Flash, Unity, Flixel, Flashpunk, HTML, etc). They're quick to start playing, and cross platform.

2. After web, Windows is your best bet. We do have a number of Mac and Linux developers, but they're a minority compared to web and Windows.

3. Though there's no restriction on Single vs. Multiplayer games, but more judges will be able to play a Single player game.

4. Windows installers (MSI, EXE) are fine, but a word of warning: Some people don't like installers! Providing a ZIP version should satisfy them.

5. Downloads should be completely self contained. Having to download Python, PyGame, MSVC runtimes, XNA Frameworks, and other addons just to play a game will frustrate some people (hence why Web is so popular now).

Competition Tips

1 To reach more participants, **web entries are best** (Flash, Unity, Flixel, Flashpunk, HTML, etc). They're quick to start playing, and cross platform.

2 **After web, Windows is your best bet**. We do have a number of Mac and Linux developers, but they're a minority compared to web and Windows.

3 Though there's no restriction on Single vs. Multiplayer games, but more judges will be able to play a Single player game.

4 Windows installers (MSI, EXE) are fine, but a word of warning: Some people don't like installers! Providing a ZIP version should satisfy them.

5 **Downloads should be completely self contained. Having to download Python, PyGame,** MSVC runtimes, XNA Frameworks, **and other addons just to play a game will frustrate some people** (hence why Web is so popular now).

Ludum Dare 27 ran August 23rd - 26th

How did it go?

2213 entries total
29 = 1.3% used Python

"I think this will probably be my last attempt at running Python as a game design language as the support just really isn't there!"

"installing Python won't happen here, sorry."

Distribution woes

Reverend Speed **says …**
Gahh, another game I can't play. I get the error message, "10secs.exe is not a valid Win32 application". Could this be because I'm on Windows XP?

Mental Atrophy **says …**
Reverend Speed, it is a 64-bit application because of the way I "compiled" it. Sorry.

Python 2 v. 3 woes

DaanVanYperen **says ...**
Ok, help me out here XD. Windows 7 user having some issues getting this running.

– Downloaded&Installed Python: http://www.python.org/download/ (grabbed 64 bit win ver)
– Downloaded&Installed Pygame: http://www.lfd.uci.edu/~gohlke/pythonlibs/#pygame (grabbed py33 64 bit).
– download and extract archive (CTRL+S downloads it)
– clicked 'BreakdownCountdown.py'

I get stuck at:

E:\Downloads\Blayne_LD27_reakdownCountdown>E:\development\Python33\python.exe BreakdownCountdown.py
Traceback (most recent call last):
File "BreakdownCountdown.py", line 20, in <module>
from Helper import *
File "E:\Downloads\Blayne_LD27_reakdownCountdown\Helper.py", line 15
except pygame.error, message:
^
SyntaxError: invalid syntax

PyGame woes

[SkyTheCoder](#) says ...
Downloaded it and it said it had an invalid import, pygame. I went to install that, and it said I needed Python 2.7 to install and I had 3.2.2. I downgraded my Python, installed pygame, and now I'm getting this error:

cd '/Users/SkyTheCoder/Downloads/cactusman/' && '/usr/local/bin/pythonw' '/Users/SkyTheCoder/Downloads/cactusman/main.py' && echo Exit status: $? && exit 1
Traceback (most recent call last):
File "/Users/SkyTheCoder/Downloads/cactusman/main.py", line 3, in <module>
import pygame
File "/Library/Frameworks/Python.framework/Versions/2.7/lib/python2.7/site-packages/pygame/__init__.py", line 95, in <module>
from pygame.base import *
ImportError: dlopen(/Library/Frameworks/Python.framework/Versions/2.7/lib/python2.7/site-packages/pygame/base.so, 2): no suitable image found. Did find:
/Library/Frameworks/Python.framework/Versions/2.7/lib/python2.7/site-packages/pygame/base.so: no matching architecture in universal wrapper

All I know about that is that an exit status of 1 is bad news. Help?

Pyglet woes

Surrealix **says ...**
Unfortunately I couldn't get it to run:

Traceback (most recent call last):
File "main.py", line 2, in <module>
File "core.pyc", line 20, in <module>
File "src\game.pyc", line 10, in __init__
File "pyglet\window\win32__init__.pyc", line 131, in __init__
File "pyglet\window__init__.pyc", line 559, in __init__
File "pyglet\window\win32__init__.pyc", line 261, in _create
File "pyglet\gl\win32.pyc", line 263, in attach
File "pyglet\gl\win32.pyc", line 208, in attach
pyglet.gl.ContextException: Unable to share contexts

Tough crowd!
Why so many issues?

- Installation friction

- Buggy standalone exes

- Python 2 v. 3 confusion

- Buggy libraries (in particular on Windows)

Tough crowd!
Why so many issues?

- Installation friction

- Buggy standalone exes {

- Python 2 v. 3 confusion

- Buggy libraries (in particular on Windows)

- cx_Freeze (all platforms)

- PyInstaller (all platforms)

- py2exe (Windows)

- py2app (OSX)

PC CD-ROM

Vampire THE MASQUERADE BLOODLINES

18+

ACTIVISION.

FREEDOM FORCE

TEEN T

CRAVE

FREEDOM FORCE VS THE 3rd REICH

FEATURING

STORY-BASED MULTIPLAYER

ALL NEW VILLAINS!

TEEN T

PC CD-ROM SOFTWARE

EVE ONLINE

VIS

PC DVD

BATTLEFIELD 2

16+

EA GAMES

PC CD-ROM

DUNGEONS & DRAGONS THE TEMPLE of ELEMENTAL EVIL

A CLASSIC GREYHAWK ADVENTURE

16+

TROIKA

ATARI

SID MEIER'S CIVILIZATION IV

PC CD-ROM SOFTWARE

2K GAMES

31847

4x

The good:

"I'm glad to say that at no point was the performance of the Python interpreter itself a problem for us. Most of the heavy lifting happens either in native libraries or on the GPU, and **Python is the perfect tool for gluing those parts together**. In some of the more performance intensive parts we got a nice boost with the Psyco JIT."

-- Sami Kyöstilä
Lead developer, Frets on Fire

The good:

"...**the main benefit we got out of Python was the quick iteration speed**. We didn't really know what the game was going to look like when we started out, so **being able to both get started quickly and try out different ideas in the form of playable prototypes was indispensable**."

-- Sami Kyöstilä
Lead developer, Frets on Fire

Biggest shortcoming?

"Lack of an easy and robust tool for compiling the game into a self-contained package for distribution."

What else could we do better?

"follow Lua's lead and make it dead-simple to embed a lean and mean interpreter statically into a C/C++ application"

"It would also help if some of the more popular game engines came out of the box with Python support -- especially on Android/iOS...somehow PyGame, Cocos2D, pyglet, etc. never made the transition to mobile."

PyWeek

Python Game Programming Challenge

Write a game in one week from scratch

Goals:

- Increase the public body of game tools, code and expertise

- Inspire new projects

PyWeek 17 is happening right now!

"Can I build mobile apps in Python?"

"Can I build mobile apps in Python?"
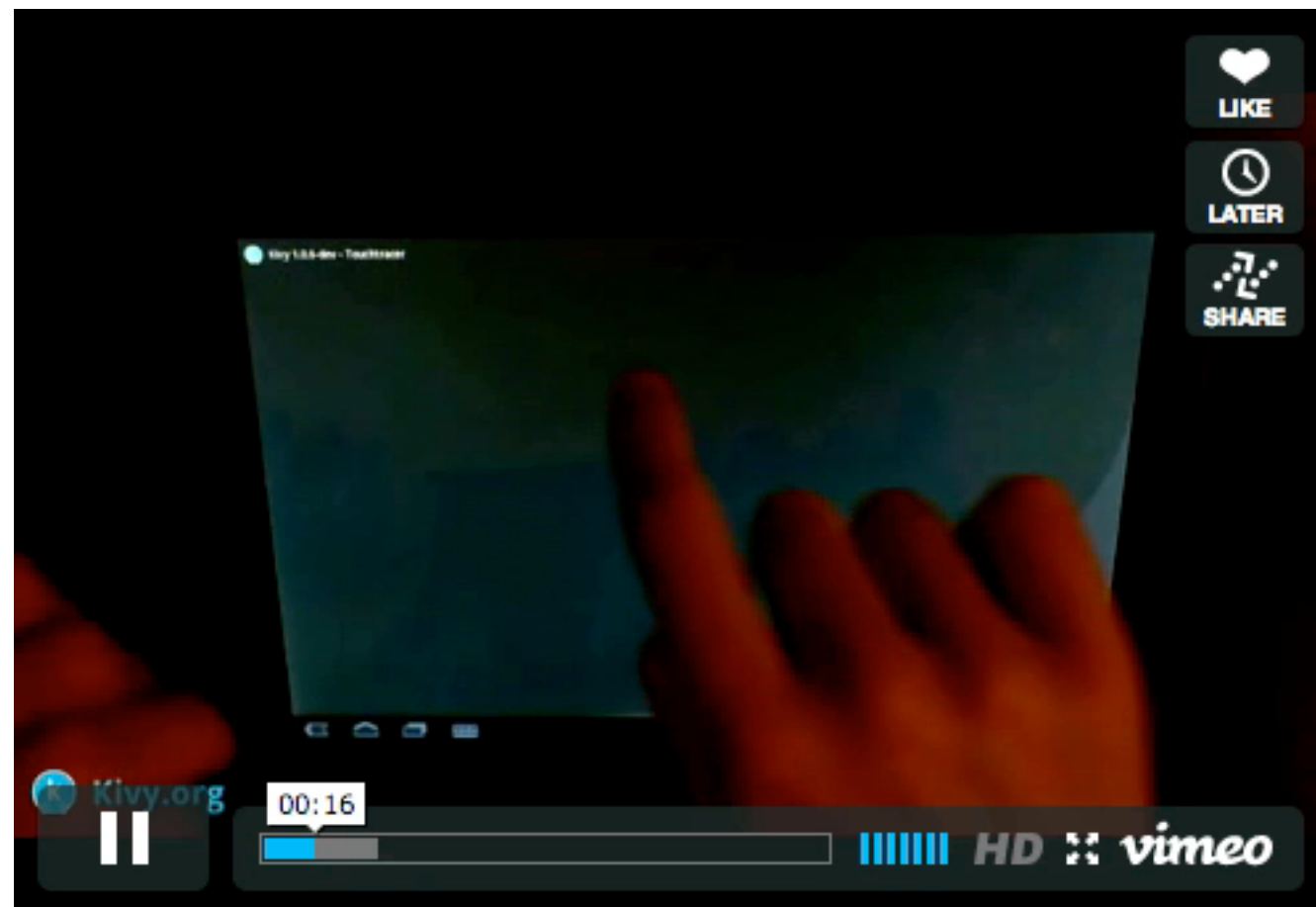
A multi-touch Android app written in Kivy.

"Can I build mobile apps in Python?"

Particle Panda HD

Chaos Buffalo Labs - April 19, 2013
Productivity

Install   **Add to Wishlist**

ⓘ This app is compatible with your device.

★★★★★ (👤 7)

Particle Panda Trailer

Deflectouch

A multitouch puzzle and skill based game.

Draw deflectors on the field, choose your angles wisely. In the end, position, angle the spaceship and fire the bullet.

Compatibility: Requires iOS 5.0 or later. Compatible with iPad.

Fire
Reset
Lives: 3
Level 1
Help
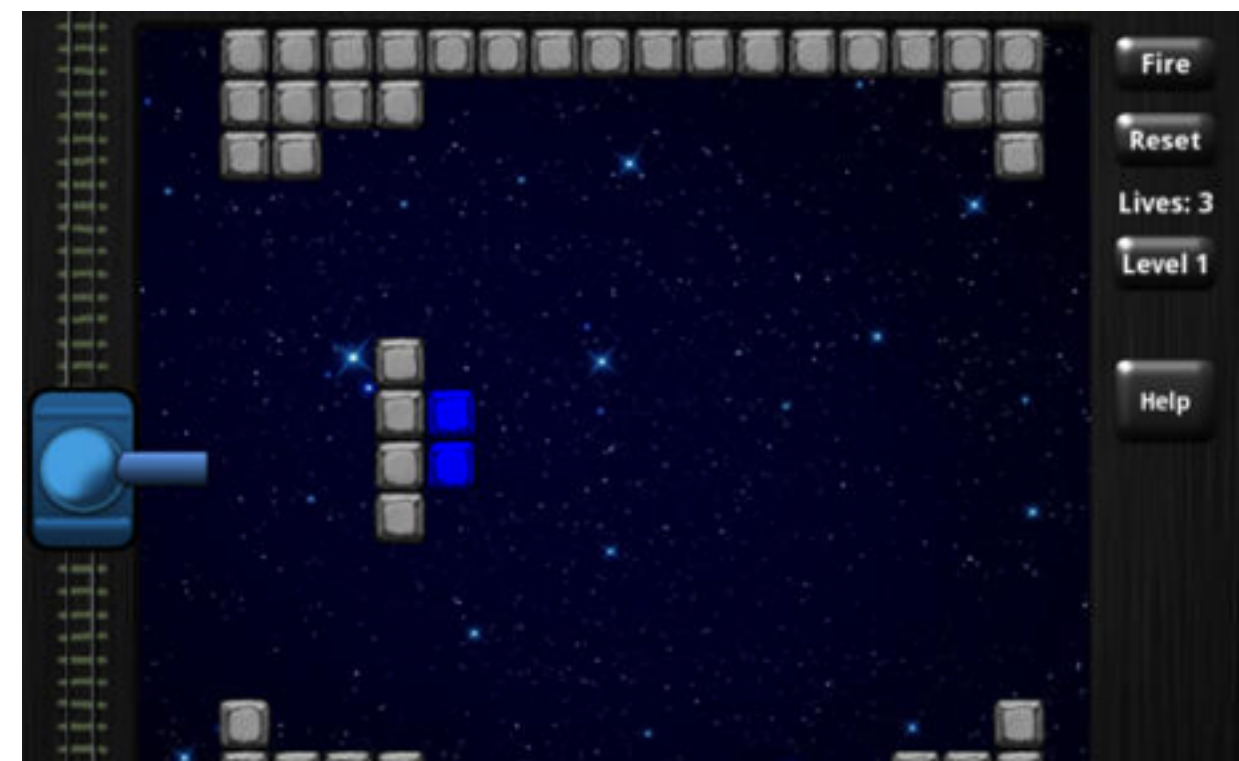
Why is Python so popular in the sciences?
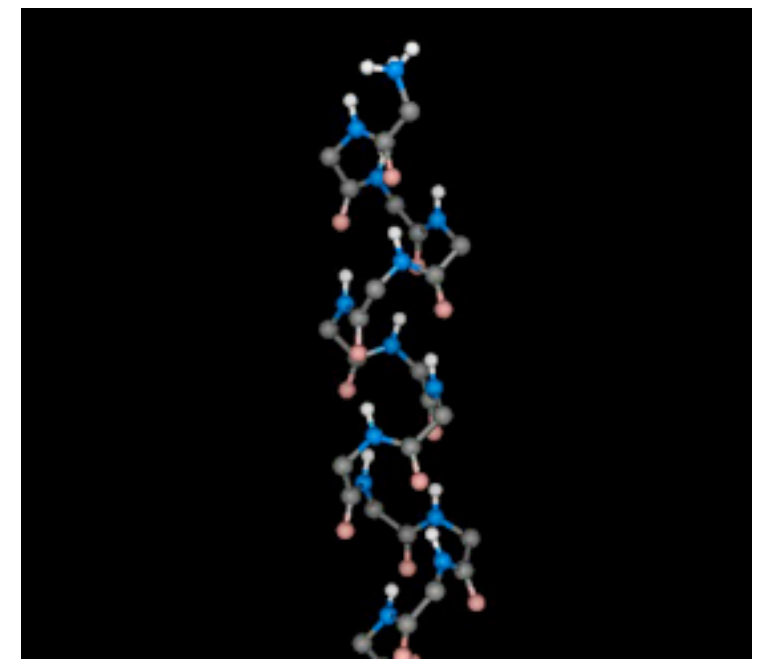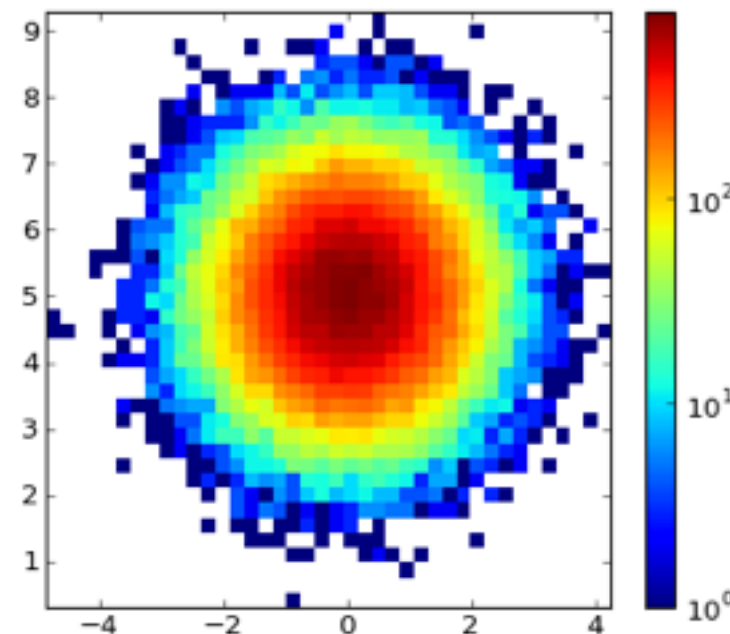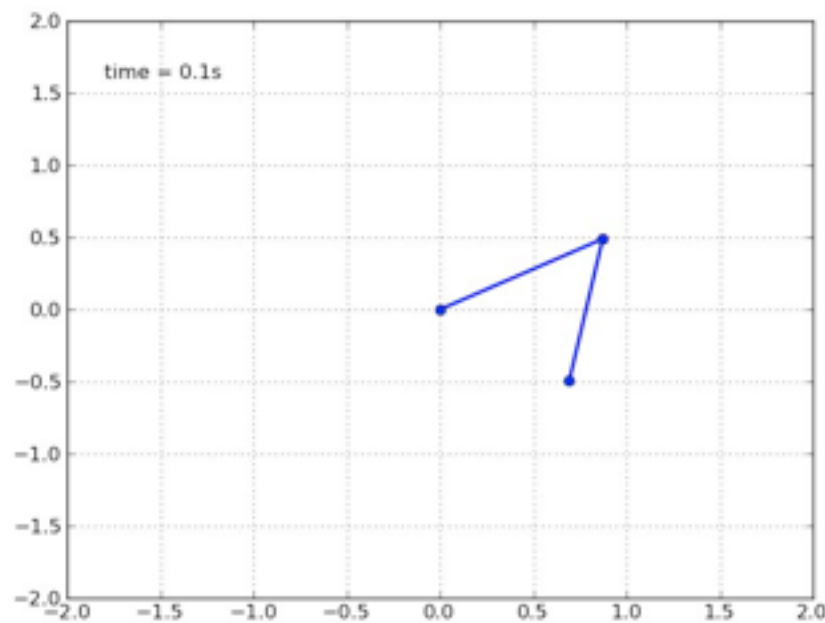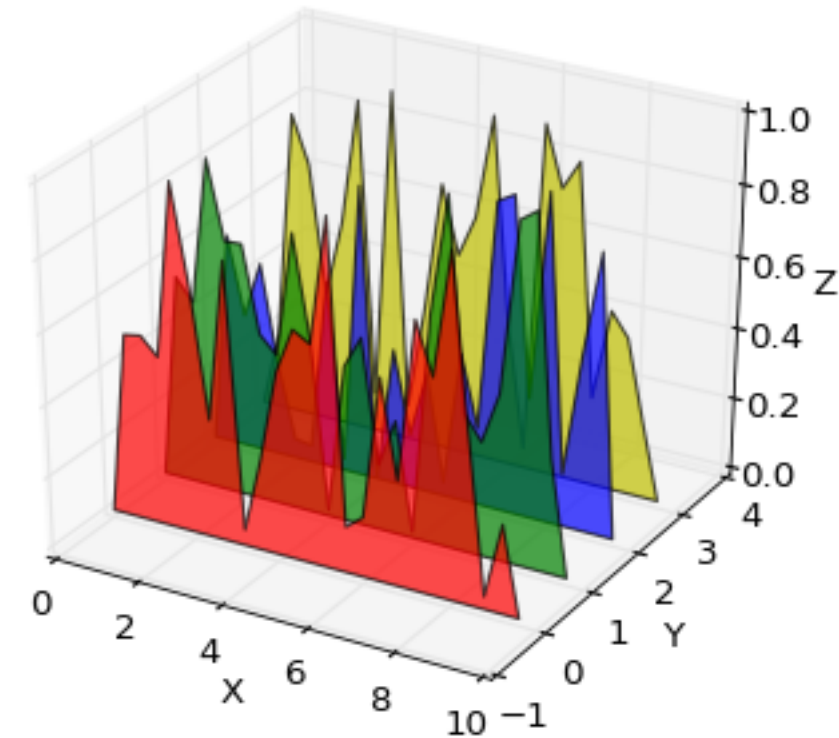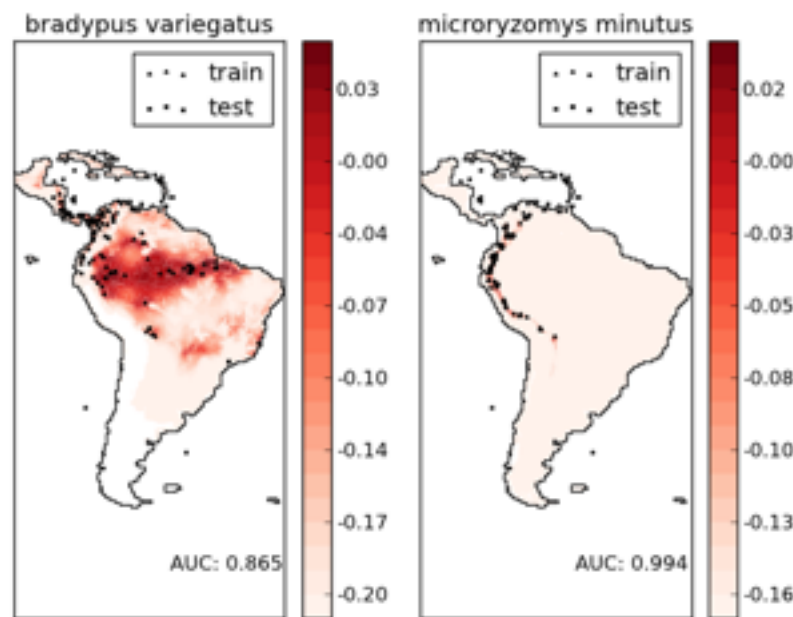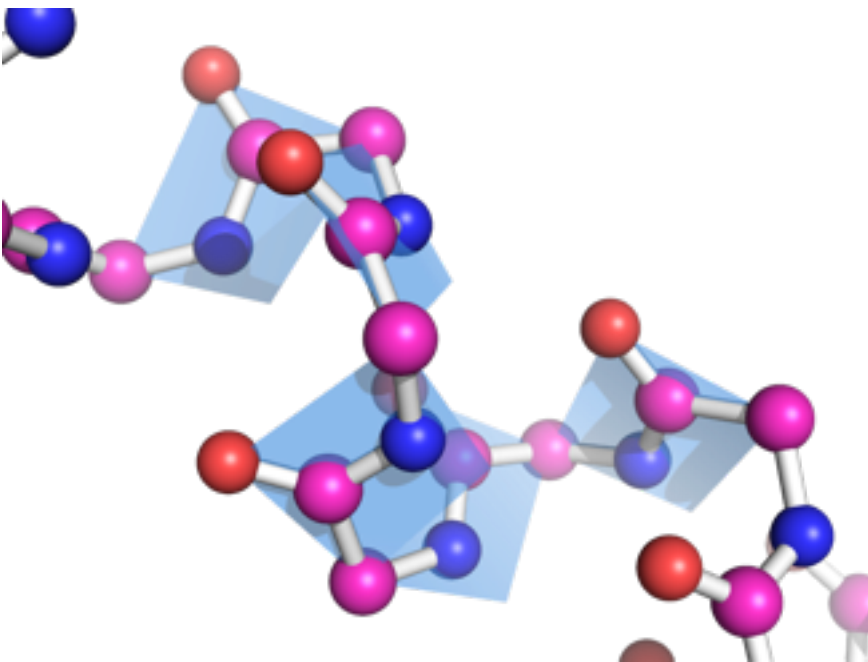
Why is Python so popular in the sciences?

- Killer libraries (NumPy, SciPy, IPython, SymPy, scikit-learn, matplotlib, pandas...)

- Scientific Python distributions (Enthought)

- Language interoperability

- All of the things you and I love about Python

"Making scientists more productive by teaching them basic computing skills."

"Making scientists more productive by teaching them basic computing skills."

- Version control
- The shell
- Testing

- Regular expressions
- Databases
- Automation

software carpentry

"Making scientists more productive by teaching them basic computing skills."

- Version control
- The shell
- Testing

- Regular expressions
- Databases
- Automation

Most bootcamps taught in python™

software carpentry

🇬🇧 University of Bristol	Sept 12-13, 2013
🇺🇸 ISI, University of Southern California	September 16-17, 2013
🇺🇸 Space Telescope Science Institute	Sept 16-17, 2013
🇺🇸 University of Chicago	Sept 19-20, 2013
🇨🇦 University of Waterloo	Sept 21-22, 2013
🇺🇸 Michigan State University	Sept 23-26, 2013
🇦🇺 Australian Bioinformatics Network: Adelaide	Sep 24-26, 2013
🇨🇦 University of British Columbia	Sept 26-27, 2013
🇦🇺 Australian Bioinformatics Network: Melbourne	Oct 1-3, 2013
🇺🇸 Society of Vertebrate Paleontology Annual Meeting	Oct 29, 2013
🇬🇧 University of Exeter	Nov 14-15, 2013
🇺🇸 Woods Hole Scientific Community	Nov 14-15, 2013
🇺🇸 National Socio-Environmental Synthesis Center	Dec 3-6, 2013

Open access to reproducible data will change the world

Let's help do it in python™

TAKE ANY ROAD YOU WANT.

How can I help?

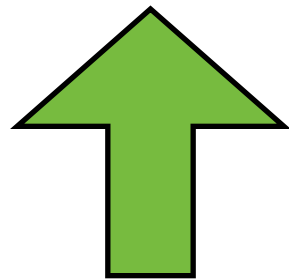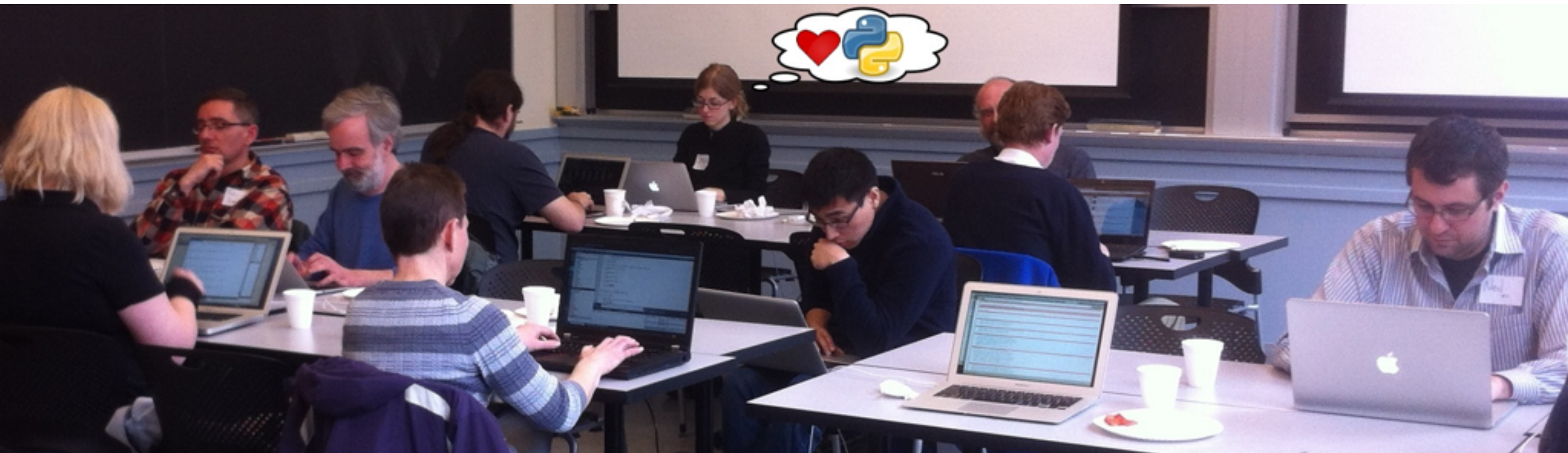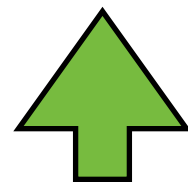# The Python Software Foundation

Make Python Core better

http://pythonmentors.com/

Run a sprint
http://pythonsprints.com

A CPython sprint for first-time contributors

http://pythonsprints.com/2013/05/5/bostons-cpython-sprint-new-contributors/

Run an intro workshop or outreach event

http://mail.python.org/mailman/listinfo/outreach-and-education

An intro workshop for first-time programmers

http://bostonpythonworkshop.com

Make the Python ecosytem better

$10,000 grant to the PyPy project

My challenge for us:

This year,
1 technical project
1 community project

Windows

Report bugs, fix bugs, build for Windows, teach workshops and experience the pain points first-hand

Games

Do PyWeek, do Ludum Dare, open-source your games, sprint on libraries, push the envelope

Mobile

Play with Kivy, report bugs, get an app in the app store

Science

Volunteer with Software Carpentry, run open source workshops, support scientists in your user group

TAKE ANY ROAD YOU WANT.