



# QtWebKit layout tests DRT and Tools



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# Outline

- ▶ Update to Qt 4.6 on the BuildBot
  - Font metric issues
  - DumpRenderTree issues
  - Progress of the port measured by passing layout tests
  - manual-tester
- ▶ Monitoring the buildbot
  - BuildBot logs
    - » Flakey tests
    - » Broken tests
  - BuildBotMiner



# Qt 4.6 issues

## ► Issues with fonts

- After the update to Qt 4.6 we experienced pixel differences in many tests (~ 500)
- After the update of the expected files however we got feedback that these metrics do only work on our BuildBot
  - » More than 300 tests have incorrect layout on developers machines but are correct on the bot



# Qt 4.6 font metric issues

- ▶ We tested other major distributions, but found only minor differences (5-10 tests)
  - We tried the default configuration of Qt 4.6, the same we use on the buildbot

```
echo yes | ./configure -opensource -no-webkit
```

Default install to /usr/local

- ▶ On my laptop I managed to reproduce the 306 failing tests



- Suspicious package differences between the buildbot and my machine:
  - » fontconfig 2.6.0 → 2.8.0
  - » libfreetype 2.3.7 → 2.3.11
  - » libxext 1.0.4 → 1.1.1

# Qt 4.6

- ▶ Why these differences?
  - Was something changed in the 4.6 release that could cause these environment-dependent problems?
    - ~1000 now skipped tests which seem to have only metric differences could be enabled if this issue is solved
- ▶ How should we fix this
  - Change the packages to older versions?
  - Find the cause in Qt and fix that?



# Proposal for new tests

- ▶ Using render-tree dumps only if really needed
  - E.g. if font metrics are important for some reason in the test
  - In this case font rendering differences between platforms may need different results
- ▶ Using `getComputedStyle()` with `dumpAsText()` if possible to validate the test
- ▶ Lobbying to change current tests to follow this proposal



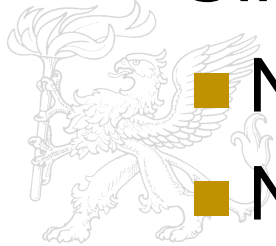
# DRT crashes after change to Qt 4.6

- ▶ Some tests seemed to corrupt follow-ups
  - run-webkit-tests reported DRT crash
  - No stderr output
  - Further investigation showed no crashes
    - » Instead there was a non-blocking I/O EAGAIN/EWOULDBLOCK issue
  - DRT did'n clean up windows opened by javascript correctly.
  - Fix landed, which reveled that there are more tests involved in DRT's notifyDone() problem.



# Other problems with DRT

- ▶ Phonon related crashes
  - Two tests are involved and are skipped because they cause the “crashes”
    - » <fast/runin/nonblock-runin.html>
    - » <http/tests/security/local-video-source-from-remote.html>
- ▶ Similar as before
  - No real crash
  - No stderr output
  - Only run-webkit-tests reports crash





# Missing DRT features

- ▶ DRT was in a really bad shape
  - All components of DumpRenderTree were in jsobjects.h and jsobjects.cpp
    - » After refactoring these to separate files the development of missing features progresses
    - » We would need some restructuring to match the implementations of other ports
- ▶ There are still many missing features
  - Especially in
    - » LayoutTestController
    - » EventSender
    - » TextInputController



# Progress of the QtWebKit port

- ▶ Tests altogether:
  - 11720
- ▶ Tests we pass:
  - More than 6300, slowly increasing
  - 5400 tests show layout problems or are new
    - As already mentioned there are approx. 1000 tests which only have font related pixel differences, or are new and correct tests.
  - A tool for making updates a bit easier:
    - <http://github.com/bbandix/manual-tester>



# manual-tester

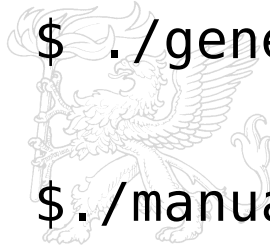
- ▶ A not-so-userfriendly Qt 4 application to visually check new or pixel-different tests

`git://github.com/bbandix/manual-tester.git`

```
$ run-webkit-tests -o ~/testResultsDir
```

```
$ ./generateTestFile.sh ~/testResultsDir \  
    ~/path_to_WebKit/LayoutTests
```

```
$ ./manual-tester pathToQtLauncher ~/testResultsDir
```



# manual-tester

The screenshot shows a web browser window titled "CSS1 Test Suite: 1.4 Class as selector". The address bar contains the file path: `file:///home/beamaat/devel/sed/git/qtwebkit/LayoutTests/css1/basic/class_as_selector.html`. The main content area displays the following text:

The style declarations which apply to the text below are:

```
.one {color: green;}  
.1 {color: red;}  
.a1 {color: green;}  
P.two {color: purple;}
```

Below the CSS code, there are several sentences demonstrating the application of these styles:

- This sentence should be green.
- This sentence should be black, not red-- class selectors cannot begin with digits in CSS1.
- This sentence should be green.
- This sentence should be purple.
- This sentence should NOT be purple.

  - This sentence should NOT be purple.

A dialog box titled "manual-tester" is overlaid on the page, containing the following text:

Inspect if the shown page is correct!

Do you want to save the actual file as expected?

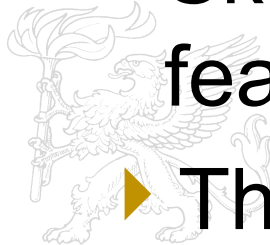
The dialog box has three buttons: "Save", "Discard", and "Abort".

At the bottom of the browser window, there is a "TABLE Testing Section" which contains a table with the following content:

This sentence should be green.
This sentence should be black, not red-- class selectors cannot begin with digits in CSS1.
This sentence should be green.

# The time-zone issue

- ▶ Most of the work on the Mac port is done in US time-zone
- ▶ Some developers didn't keep an eye on our bot
- ▶ Keeping the BuildBot green without skipping tests and implementing missing features at the same time is hard
- ▶ The logs of the buildbot are short, searching is hard



# Monitoring the buildbot

- ▶ We started to monitor our buildbot one month ago to have more information
  - Now we have raw data on more than 1000 revisions
  - We started to design a web-capable information system
    - BuildBotMiner

```
MSG=SUCCESS
SLAVE=Qt_Linux_Release
BUILD=3890
REVISION=51044
REVIEWER="Gustavo Noronha
Silva"
AUTHOR="Kenneth Rohde
Christiansen"
FILES_CHANGED=11
PATCH_LLOC=744
DATE="2009-11-16"
JSCREGRUN=1119
JSCREGFAIL=0
JSCREGFIX=0
RUN=6227
OK=6158
NEW=26
FAIL=19
CRASH=24
TIMEOUT=0
```



# BuildBotMiner

- ▶ Script gathers the raw info and log files
- ▶ Python / Django based web application
  - Parsing the information and logfiles
  - Loading the information to a database
- ▶ We plan to fully monitor our new bots and make the information publicly available
  - » Additional information to our benchmark site
- ▶ Sophisticated queries and forms for presentin the data need to be done yet
- ▶ What is it good for?



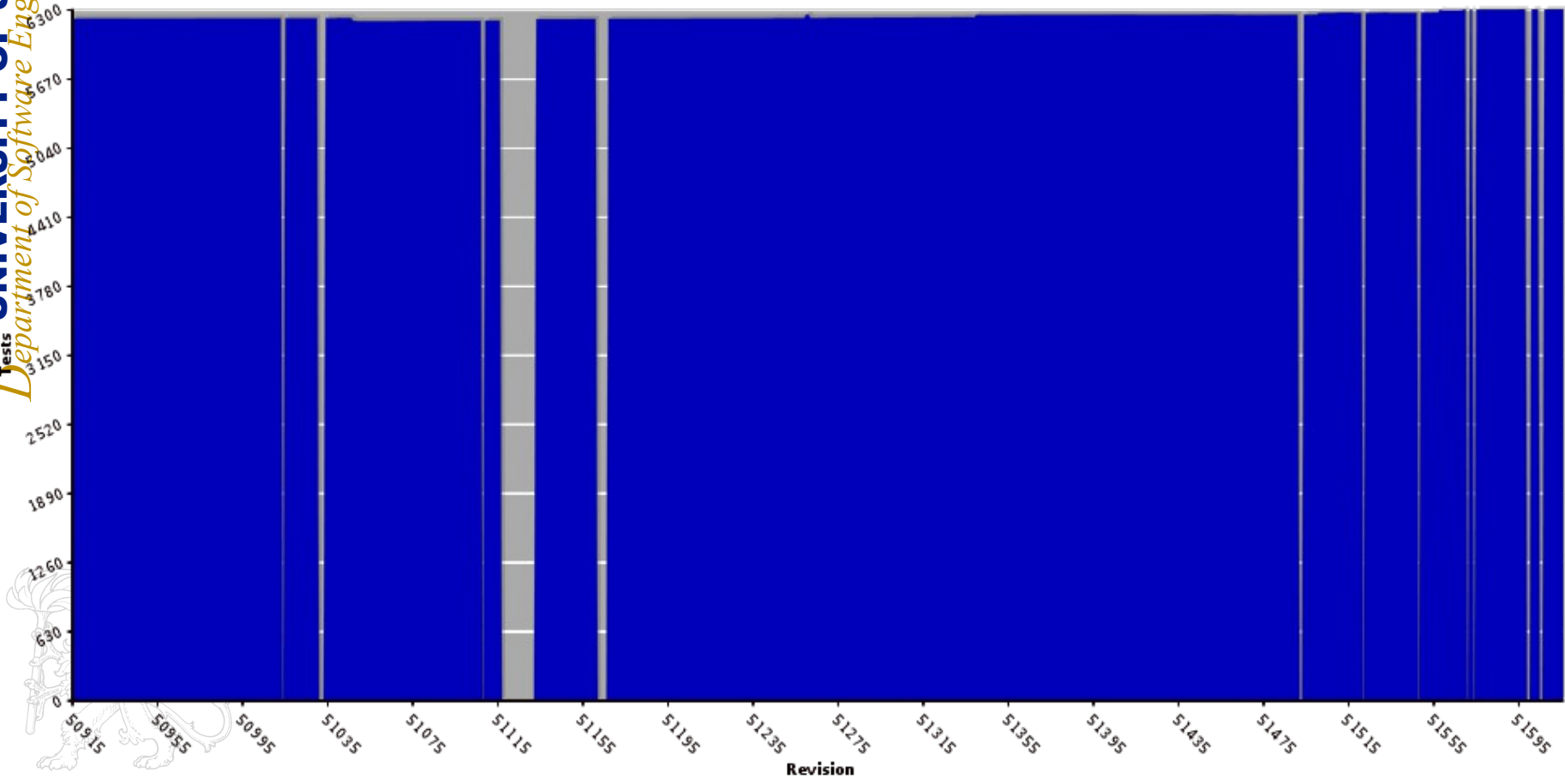
# BuildBotMiner

- ▶ Connect the buildbot and the svn trac
- ▶ Planned features
  - Monitoring and pointing out flakey tests
  - Pointing out the cause of over-the-night failing tests
  - Logging build issues
  - Gathering information about
    - Development process and progress
    - Layout test debugging progress
  - Creating fancy charts and graphs

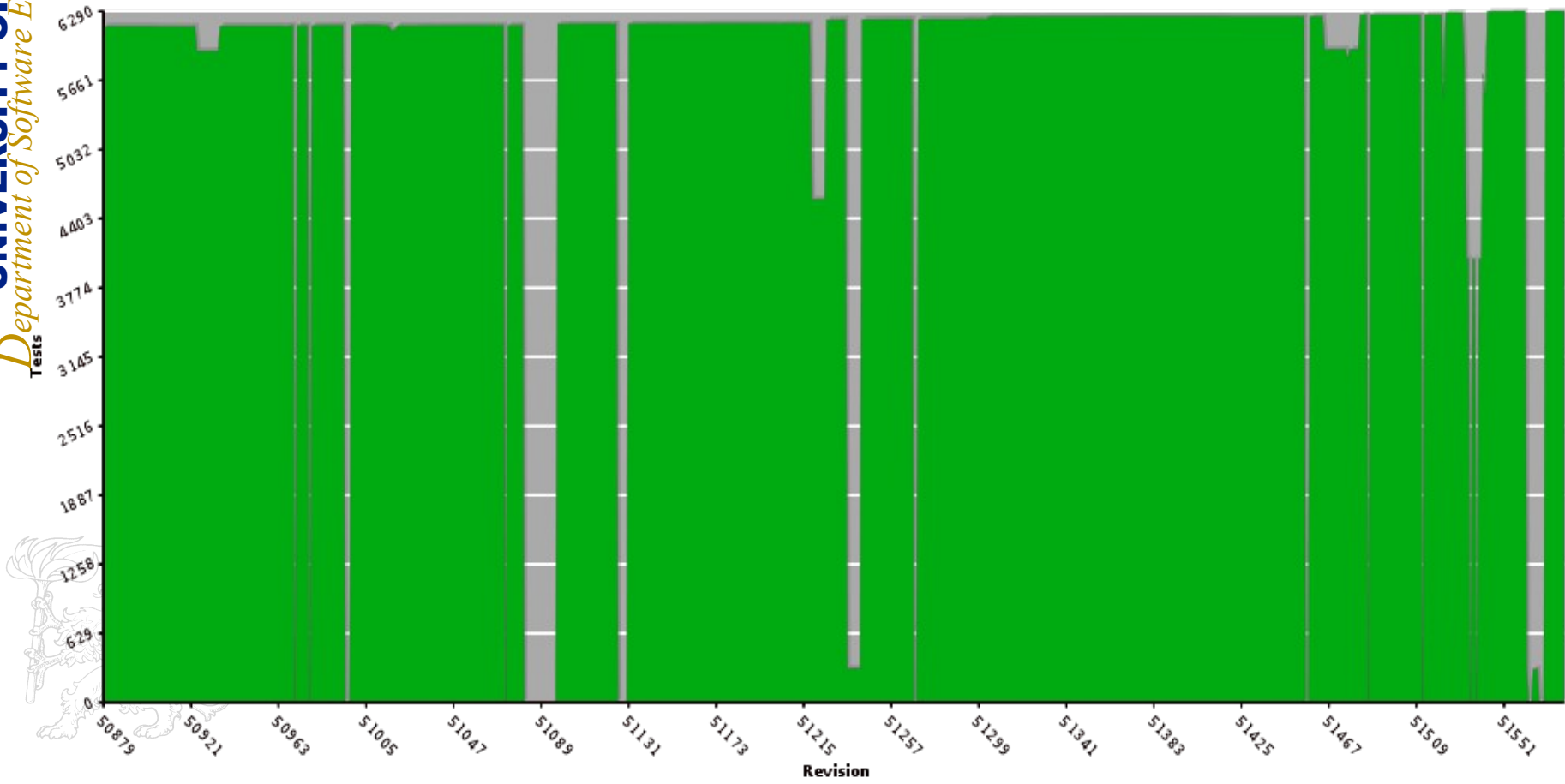




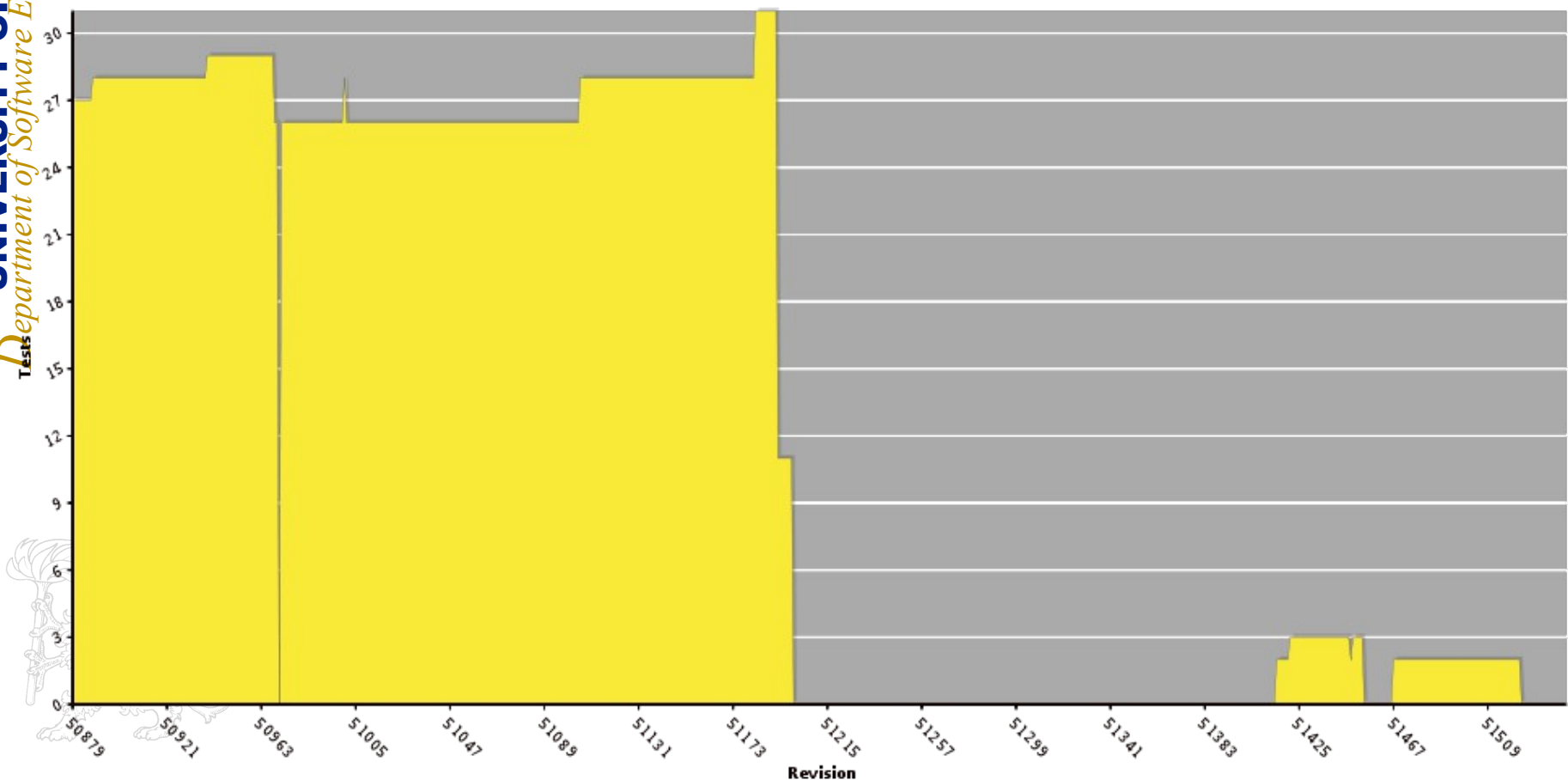
Run Tests History [ r50915 (3790) - r51724(4493) ]



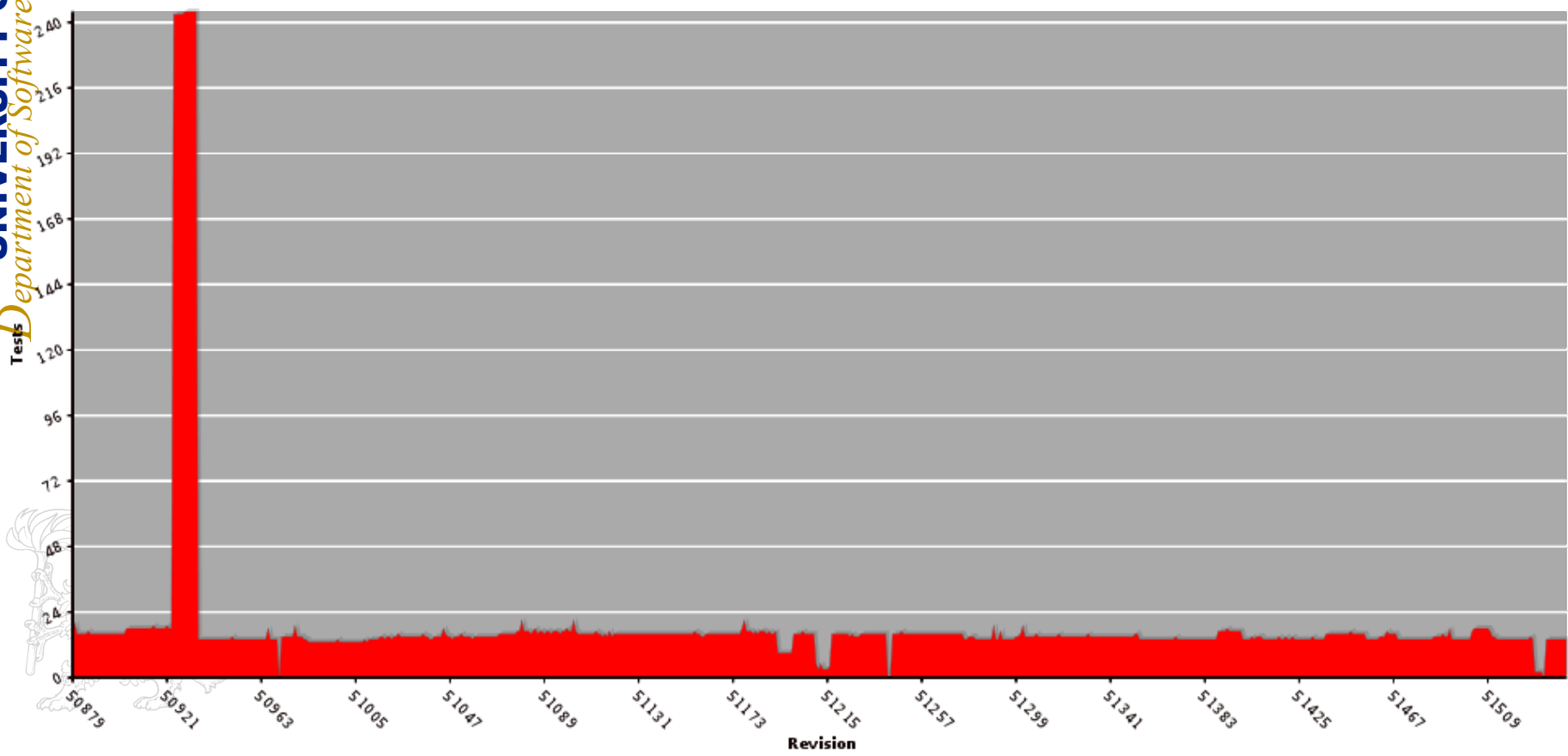
Succeeded Tests History [ r50879 (3790) - r51724(4493) ]



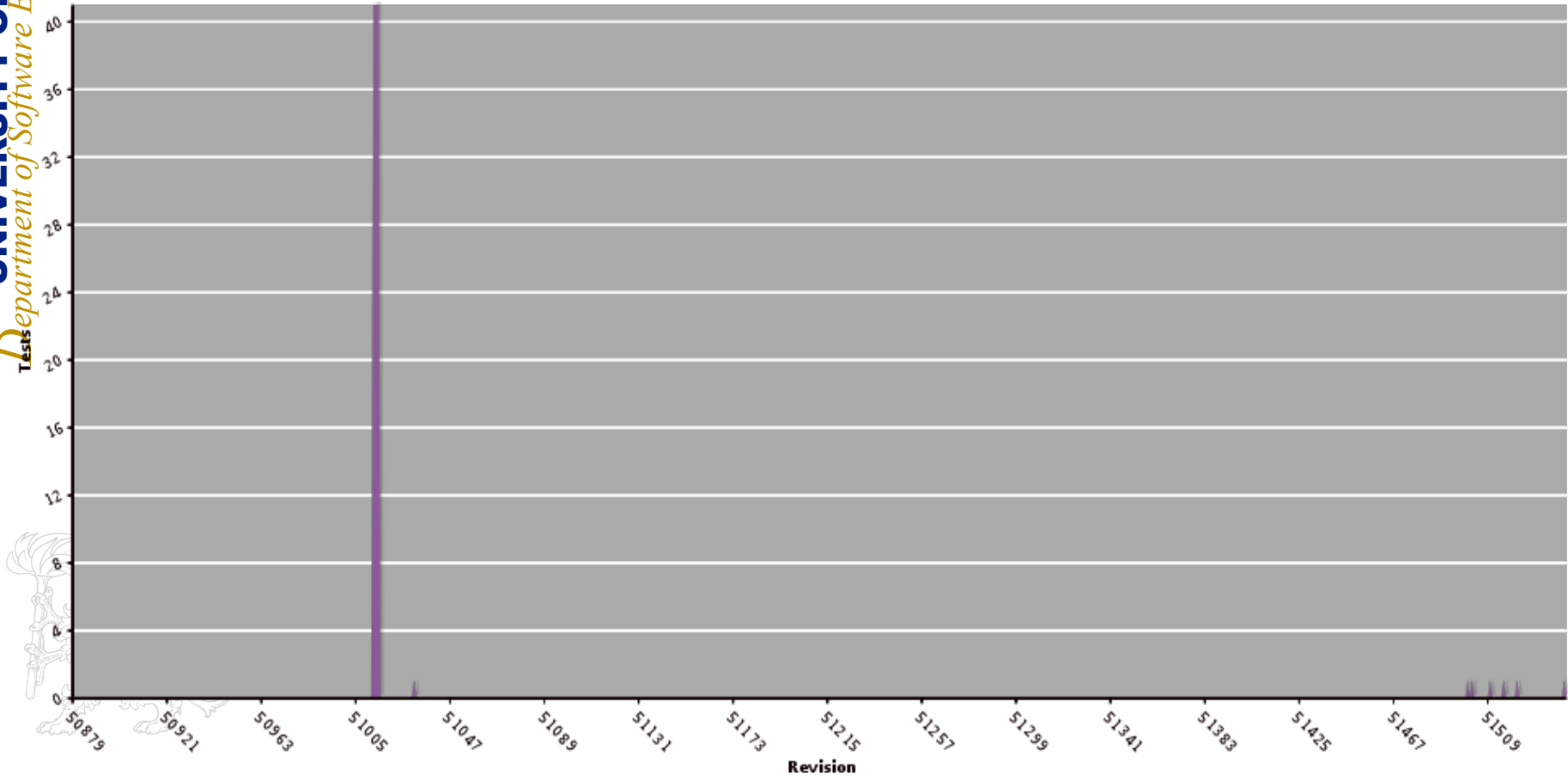
New Tests History [ r50879 (3790) - r51724(4493) ]



Failed Tests History [ r50879 (3790) - r51724(4493) ]



### Timed out Tests History [ r50879 (3790) - r51724(4493) ]



# BuildBotMiner

- ▶ More soon on our blog:

<http://webkit.sed.hu>





Thanks for your patience!