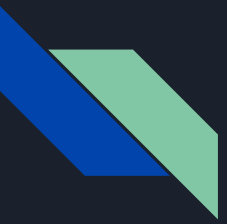
Building a statistical profiler

and reading flame graphs too!



Fun with Frames!

Matt showed you exceptions

Craig showed you debugging

I’ll show you profiling

What *is* a statistical profiler?

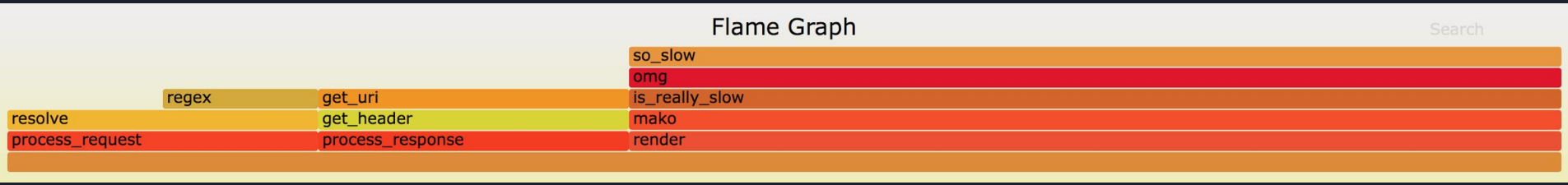
```
signal.setitimer(signal.ITIMER_VIRTUAL, 0.01)
signal.signal(signal.SIGVTALRM, sample)
```

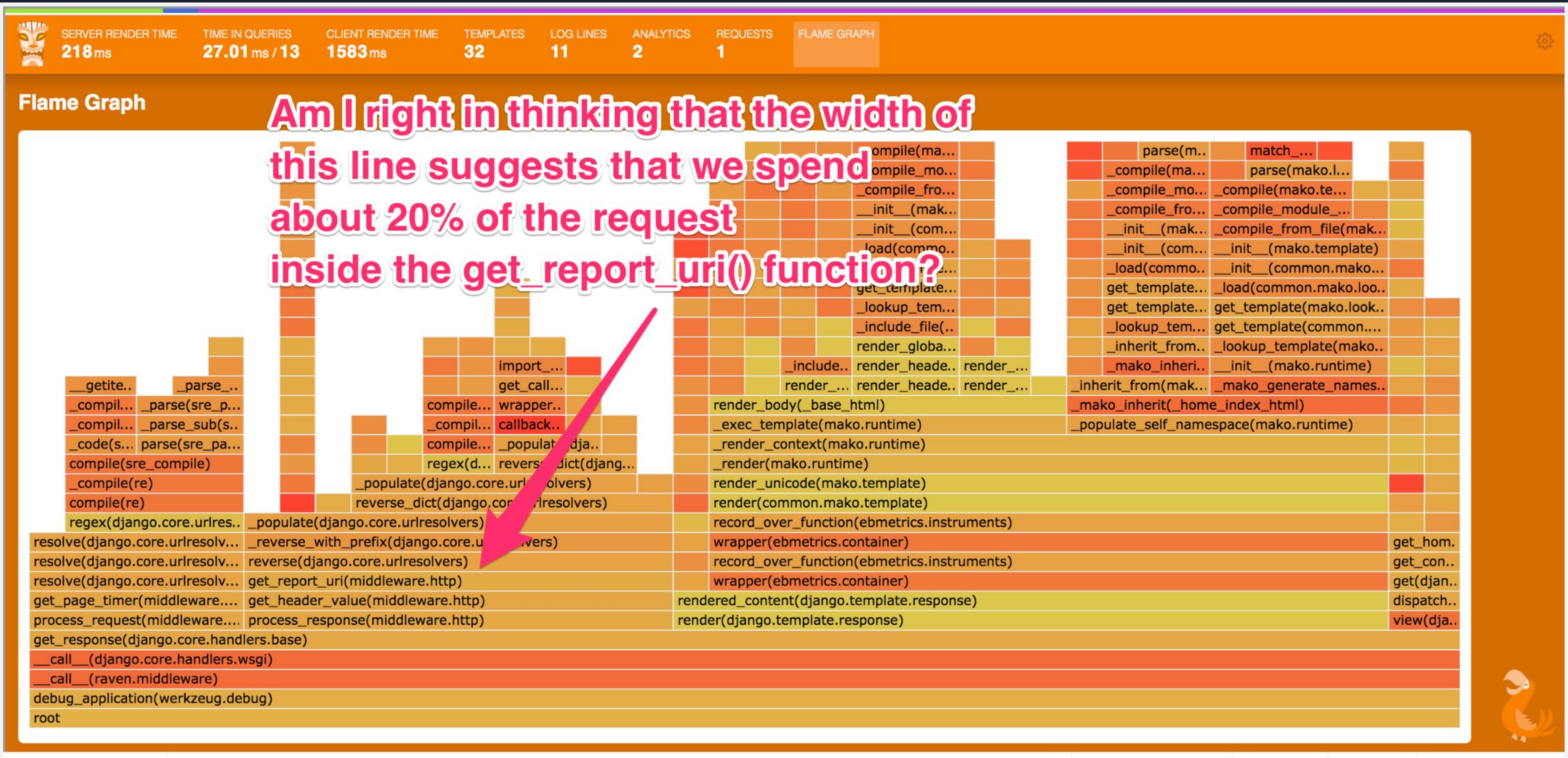
```
stack_counts = {}

def sample(self, signum, frame):
    stack = []
    while frame is not None:
        stack.append(frame.f_code.co_name)
        frame = frame.f_back

    stack = ';'.join(reversed(stack))
    stack_counts[stack] += 1
    signal.setitimer(signal.ITIMER_VIRTUAL, 0.01)
```

```
process_request;resolve 1
process_request;resolve;regex 1
process_response;get_header;get_uri 2
render;mako;is_really_slow;omg;so_slow 6
```


Flame Graph
Search
so_slow
omg
regex
get_uri
is_really_slow
resolve
get_header
mako
process_request
process_response
render


SERVER RENDER TIME 218 ms
TIME IN QUERIES 27.01 ms / 13
CLIENT RENDER TIME 1583 ms
TEMPLATES 32
LOG LINES 11
ANALYTICS 2
REQUESTS 1
FLAME GRAPH
Flame Graph
Am I right in thinking that the width of this line suggests that we spend about 20% of the request inside the get_report_uri() function?
root
debug_application(werkzeug.debug)
__call__(raven.middleware)
__call__(django.core.handlers.wsgi)
get_response(django.core.handlers.base)
process_request(middleware....
get_page_timer(middleware....
resolve(django.core.urlresolv...
regex(django.core.urlres..
compile(re)
_compile(re)
compile(sre_compile)
process_response(middleware.http)
get_header_value(middleware.http)
get_report_uri(middleware.http)
reverse(django.core.urlresolvers)
_populate(django.core.urlresolvers)
render(django.template.response)
rendered_content(django.template.response)
wrapper(ebmetrics.container)
record_over_function(ebmetrics.instruments)
render(common.mako.template)
render_unicode(mako.template)
_render(mako.runtime)
_render_context(mako.runtime)
_exec_template(mako.runtime)
render_body(_base_html)
_populate_self_namespace(mako.runtime)
_mako_inherit(_home_index_html)
view(dja..
dispatch..
get(djan..
get_con..
get_hom.

Flame on!

- http://www.brendangregg.com/flamegraphs.html
- https://www.nylas.com/blog/performance/
- https://vmprof.readthedocs.io/en/latest/
- https://eng.uber.com/pyflame/