Building Github 'Bots

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What is a Github 'bot?

They're like Post-Commit hooks.

But with a better name. 'Bots.

What can they do?

Compress images

Revert test code

Email your team when an important file changes

Ya heard of Continuous Integration?

Your build server's API sucks. Github's doesn't.

How do they work?

Push changes to Github

Post-Receive hook fires

The 'bot receives a POST request

'Bot does some cool stuff

Before we get started...

Advanced Git

Tellin' you now so it'll sink in. You'll need it later.

Blobs

Trees

Commits

Refs

Blobs

They're like files.

```
1 ▼  {
2      sha: "519aebd5b99e65cafa2321f734f53982c1c1a4cc",
3      size: 21,
4      url: ".../git/blobs/519aebd5...",
5      content: "Ym90LWltYWdlcwo9PT09PT09PT09 ",
6      encoding: "base64"
7 ▲  }
8
```

Trees

They're like folders.

```
{
  sha: "768865570abfca90e28e32a98c61d4823ff673b7",
  url: ".../git/trees/76886557...",
  tree: [{
      mode: "100644",
      type: "blob",
      sha: "519aebd5b99e65cafa2321f734f53982c1c1a4cc",
      path: "README.md",
      size: 21,
      url: ".../git/blobs/519aebd5..."
    },
    {
      mode: "040000",
      type: "tree",
      sha: "c740dcc73ed5fc9281b2888c35b1202d544b923d",
      path: "subdir",
      url: ".../git/trees/c740dcc7..."
    }]
}
```

Commits

They're like commits.

```
{
  sha: "a45ff3f19ba8a0d1e1c1957cdd7e4f773d67a955",
  url: ".../git/commits/a45ff3f1...",
  author: {
    name: "Erik Person",
    date: "2013-02-21T02:25:23Z"
  },
  tree: {
    sha: "768865570abfca90e28e32a98c61d4823ff673b7",
    url: ".../git/trees/76886557..."
  },
  message: "Revert...",
  parents: [
  {
    sha: "b43b526a6d6cc9585af7522accb6c8ae4cc86219",
    url: ".../git/commits/b43b526a..."
  }]
}
```

Refs

They're like branches.

```
{
  ref: "refs/heads/master",
  url: ".../git/refs/heads/master",
  object: {
    sha: "a45ff3f19ba8a0d1e1c1957cdd7e4f773d67a955",
    type: "commit",
    url: ".../git/commits/a45ff3f1...."
  }
}
```

Enough Git

Don't forget it.

Image 'Bot in Action

Add a .png to repository

Image Bot finds it, compresses it

Makes commit with new image file

Creates Pull Request

Add a .png to your local repository

Push to Github (duh)

Github's Post-Receive Service Hook fires

https://github.com/:user/:repo/settings/hooks

Your 'bot receives a POST request

```ruby
post '/' do

  payload = JSON.parse(params[:payload])

end
```

Find added or modified pngs

```ruby
def find_image_paths(commits)
  paths = commits.map do |commit|
    all_paths = (commit["added"] || []) +
                (commit["modified"] | [])
    image_paths = all_paths.grep(/\.png$/)
    image_paths
  end
  paths.flatten.uniq
end
```

Find tree items for .png images

```
def image_tree_items_from_commit(gh, commit)
  tree_sha = commit["tree"]["sha"]

  full_tree = gh.tree_recursive(tree_sha)

  full_tree["tree"].select do |object|
    object["type"] == "blob" &&
      valid_image?(object["path"])
  end
end
```

Compress images and save as blobs

```ruby
def save_image_files_from_tree_items(gh, items)
  new_blobs = []
  i_o = ImageOptim.new(pngout: false)
  items.each do |item|
    blob = gh.blob(item["sha"])
    return if blob["encoding"] != "base64"
    Tempfile.open(item["sha"]) do |temp|
      temp.write(Base64.decode64(blob["content"]))
      File.open(i_o(temp.path)) do |f|
        encoded = Base64.strict_encode64(f.read)
      end
      if encoded.length < blob["content"].length
        new_blob = gh.create_blob(encoded)
        new_blobs<< new_blob
      end
    end
  end
  new_blobs
end
```

Create all the git things

```ruby
commit_sha = head_commit["sha"]
tree_sha = head_commit["tree"]["sha"]
new_tree = gh.create_tree(tree_sha, blobs)

new_commit = gh.create_commit("...",
                [commit_sha], new_tree["sha"])

update_branch_with_commit(gh, new_commit)
body = blobs.map { |b| "* #{b["path"]}\n" }
gh.create_pull_request("...", body, branch)
```

That's all it takes, you guys.

Easy, right?

Getting started with your own 'bot

github.com/erikperson/image-bot

Put yours on Github

@personerik

github.com/erikperson

/image-bot

/bot-images