

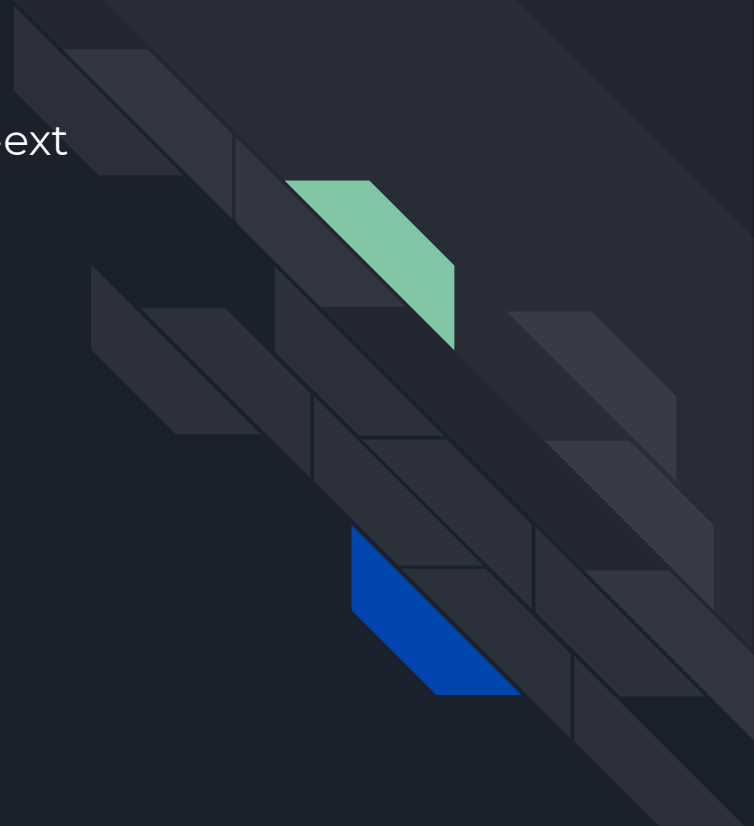


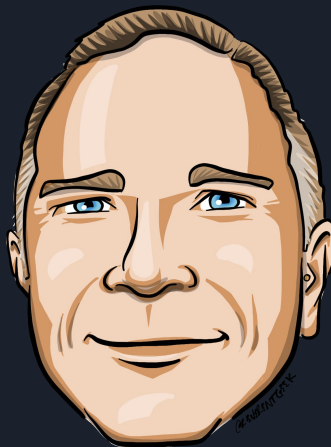
# Blasting Browser Security

with Extensions

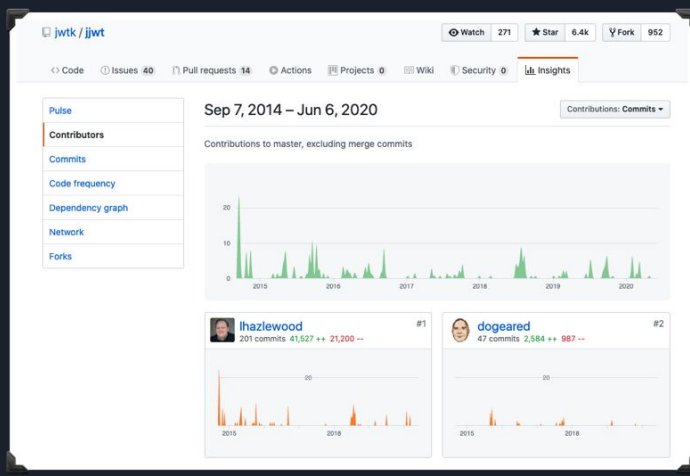
# AGENDA

- What are Browser Extensions
- Anatomy of an Extension
- Cross-platform extensions with web-ext
- Introducing Pretty Kitty
  - Background
  - Popup
  - Content script
- Packaging
- Deploying
  - Google Chrome Web Store
  - Mozilla Add-ons Store
- Review Process?

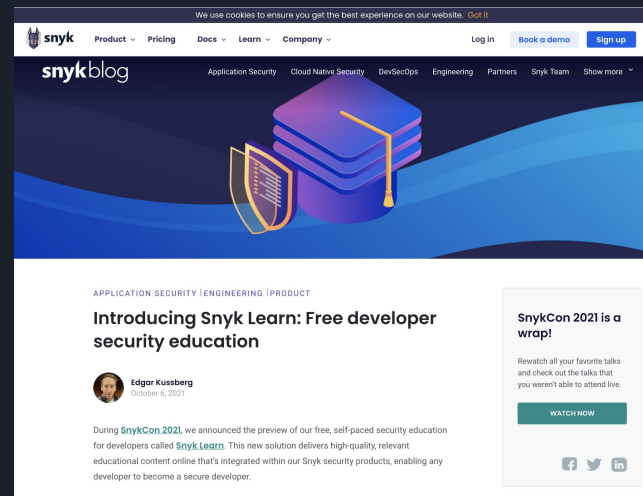




MICAH SILVERMAN  
Director, Developer Acceleration  
@AFITNERD  
@SNYKSEC



<https://github.com/jwtok/jjwt>



<https://snyk.io/blog>



# What is a Browser Extension?

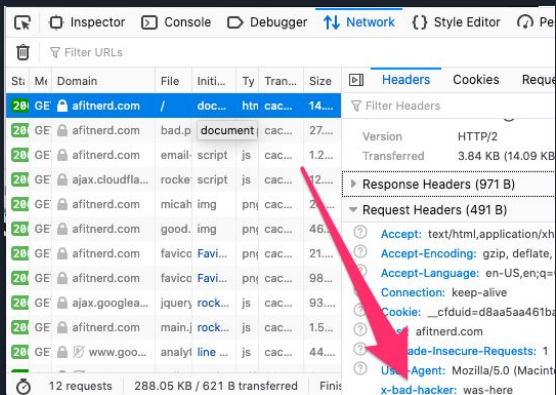
[https://en.wikipedia.org/wiki/Browser\\_extension](https://en.wikipedia.org/wiki/Browser_extension)

A browser extension is a small software module for customizing a web browser.

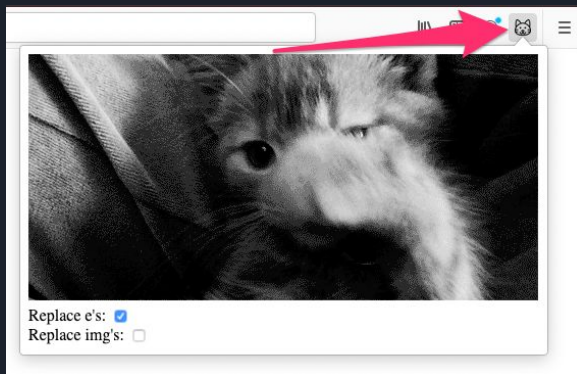


# Anatomy of a Browser Extension

`manifest.json` file describes:



Background Scripts



Popup scripts



Content altering scripts

# Anatomy of a Browser Extension

```
{ manifest.json > ...  
1  
2 "manifest_version": 2,  
3 "name": "Pretty Kitty",  
4 "version": "0.1.1",  
5 "description": "An extension to view cute cat gifs",  
6 "homepage_url": "https://thecatapi.com/",  
7 "icons": {  
8   "32": "icons/cat-32.png"  
9 },  
10 "permissions": [  
11   "*/**/*",  
12   "webRequest", "webRequestBlocking",  
13   "tabs", "storage"  
14 ],  
15 "background": {  
16   "scripts": [  
17     "browser-polyfill.min.js",  
18     "background.js"  
19   ]  
20 },  
21 "content_scripts": [  
22   {  
23     "matches": ["*/**/*"],  
24     "js": [  
25       "browser-polyfill.min.js",  
26       "beautify.js"  
27     ]  
28   }  
29 ],  
30 "browser_action": {  
31   "default_icon": "icons/cat-32.png",  
32   "theme_icons": [{  
33     "light": "icons/cat-32.png",  
34     "dark": "icons/cat-32.png",  
35     "size": 32  
36   }],  
37   "default_title": "Pretty Kitty",  
38   "default_popup": "popup/index.html"  
39 }  
40 }
```

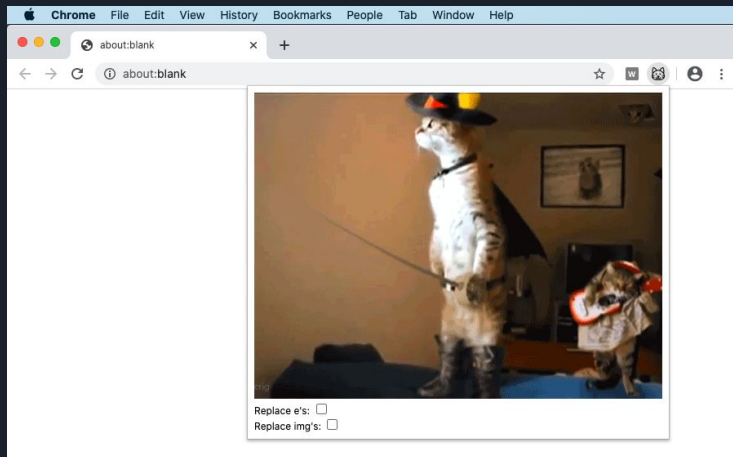
Background Scripts

Content altering scripts

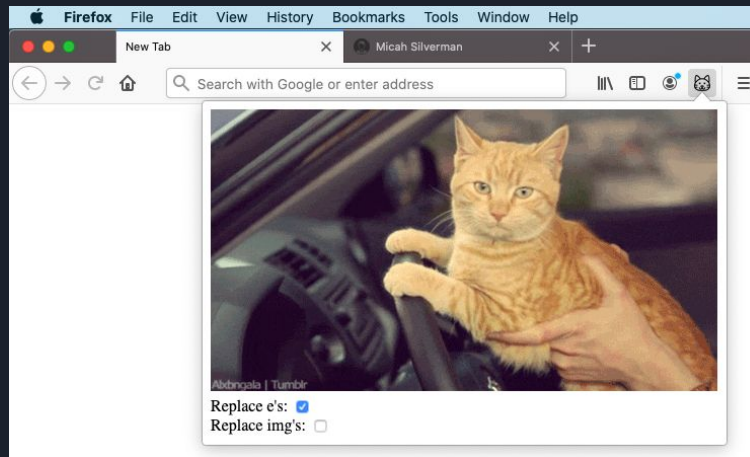
Popup scripts

# History of Browser Extensions

`chrome.webRequest.onBeforeRequest`



`browser.webRequest.onBeforeRequest`

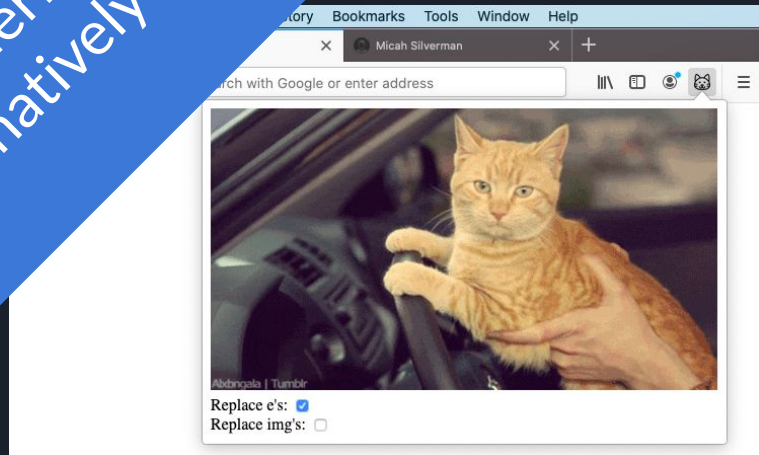
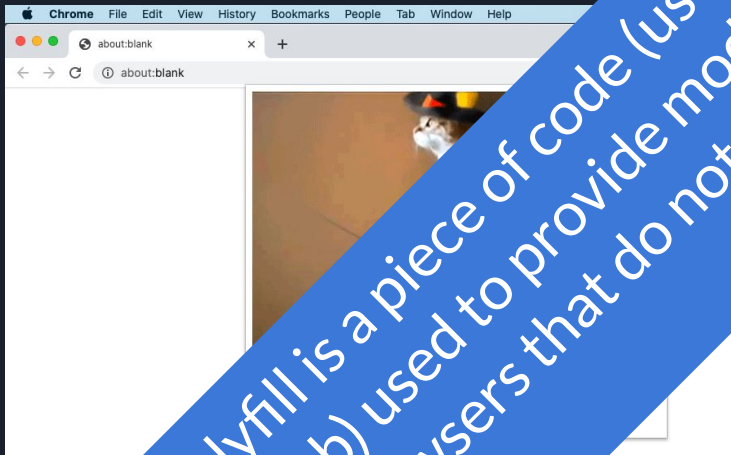


# History of Browser

`browser-`

`browser.web`

A polyfill is a piece of code (usually JavaScript on the Web) used to provide modern functionality on older browsers that do not natively support it.







# web-ext FTW!

<https://github.com/mozilla/web-ext>

“...it aims to support browser extensions in a standard, portable, cross-platform way.”

DEVELOP

TEST

BUILD

DEPLOY

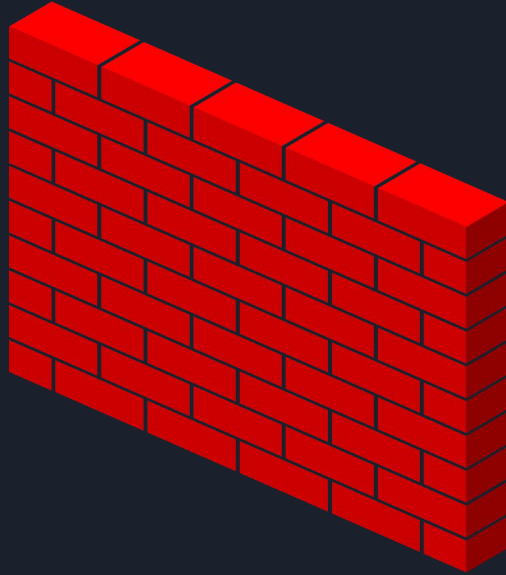


# { Presenting Pretty Kitty Browser Extension }



# The way it's supposed to be

Background script  
Popup script



Content script

# The way it is



Background script

Popup script

Content script



# Three ways to communicate

## 1. Programmatic Injection

*popup.js:*

```
document.getElementById('control').addEventListener(  
  'click',  
  function () {  
    browser.tabs.query(  
      { active: true, currentWindow: true }  
    ).then(activeTabs => {  
      browser.tabs.executeScript(  
        activeTabs[0].id,  
        { code: `// replace E's` }  
      );  
    });  
  });
```



# Three ways to communicate


## 2. Message Passing

***popup.js:***

```
browser.tabs.sendMessage(  
  activeTabs[0].id,  
  { replaceEs: true, replaceImgs: false }  
);
```

***content.js:***

```
browser.runtime.onMessage.addListener(request => {  
  if(request.replaceEs) {  
    // replace all e's  
  }  
});
```



# Three ways to communicate

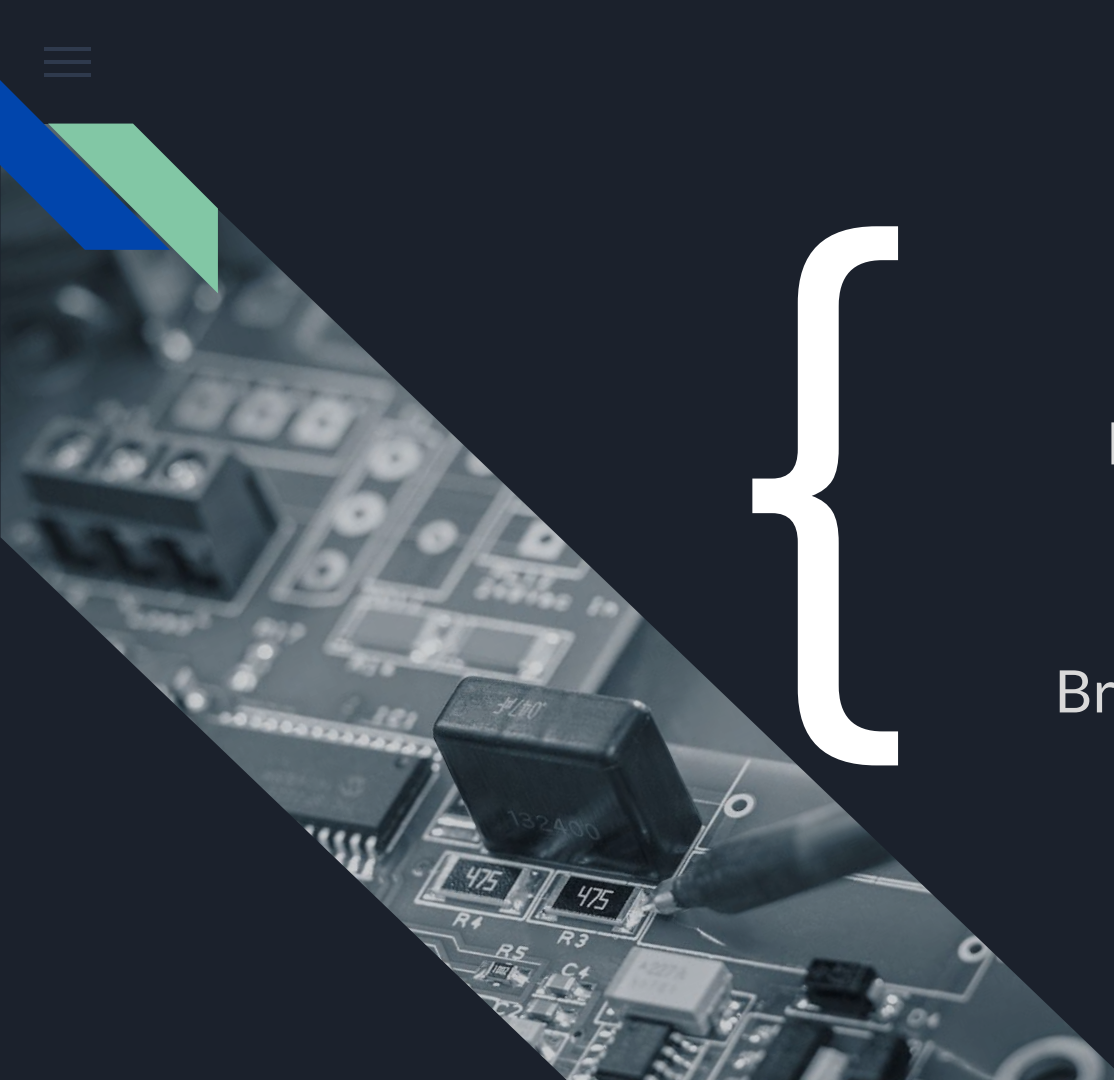
## 3. Local Storage

***popup.js:***

```
browser.storage.local.set(  
  {'pretty.kitty.settings': { replaceEs: true }}  
)  
  
  .then(() => console.log("OK"));
```

***content.js:***

```
browser.storage.local.get('pretty.kitty.settings')  
  .then(item => {  
    if (item['pretty.kitty.settings'].replaceEs) {  
      // replace E's  
    }  
  })
```



Presenting  
Build & Deploy  
**Pretty Kitty**  
Browser Extension



## Register as a Chrome Web Store Developer

Welcome to the Chrome Web Store Developer Dashboard. Once registered, you'll be able to distribute, monetize, and manage extensions and themes for the Google Chrome browser. [Learn more](#)

Get started:



### Accept Developer Agreement and Privacy Policies

- [Google Chrome Web Store Developer Agreement](#)
- [Google Privacy Policy](#)
- [Chrome Web Store Developer Program Policies](#)

☒ I have read and agree to the Developer Agreement and Policies



### Pay the \$5 registration fee

A one-time registration fee is required in order to register your account.

[Pay registration fee](#)



Firefox Browser  
**ADD-ONS**

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[Extensions](#)

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[View My Profile](#)

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#### Account

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You can change your email address on Firefox Accounts. [Need help?](#)

[Manage Firefox Accounts...](#)

#### Profile

Display Name \*

Tell users a bit more information about yourself. Most fields are optional, but they'll help other users get to know you better.

Homepage

This URL will only be visible for users who are developers.

Location

Occupation

Profile photo



[Choose Photo...](#)

<https://addons.mozilla.org/en-US/firefox/addon/pretty-kitty/>



Explore Extensions Themes More...

pretty kitty

1,676 results found for "pretty kitty"

Filter results

Sort by

Relevance

Add-on Type

All

Badging

Any

Search results



Pretty Kitty

An extension to view cute cat gifs  
★★★★★ Micah Silverman

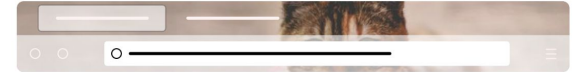
0 users



PRETTY KITTY

★★★★★ MOTORIST

0 users



Pretty Kitty

★★★★★ VanillaOrchids

0 users

chrome web store

pretty kitty

Home

- Extensions
- Themes

Features

- Runs Offline
- By Google
- Free
- Available for Android
- Works with Google Drive

Ratings

- ★★★★★
- ★★★★★ & up
- ★★★★★ & up
- ★★★★★ & up

Privacy Policy

Terms of Service Updated

About Chrome Web Store

Extensions



Cats Wallpaper HD New Tab Theme

Offered by: Wallpaper Addons

Beautiful Cats wallpapers with useful utilities.

★★★★★ 2 Photos

new

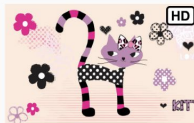


Pretty Kitty

Offered by: micah.silverman

An extension to view cute cat gifs

Fun



Cute Kitty HD Wallpapers New Tab Theme

Offered by: <https://girly.life>

Install this theme and enjoy HD wallpapers of Cute Kitty every time you open a new tab.

★★★★★ 1 Photos

<https://chrome.google.com/webstore/detail/pretty-kitty/dnbpaahgdcejdkgmkgmhmdgihmhopkhgh>



snyk

Develop fast.  
**Stay secure.**



# Thank You!



MICAH SILVERMAN  
Director, Developer Acceleration  
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