TurfJS - Modular GeoSpatial Engine

ME

💥 Write software 💥

Trying to learn and improve 👍

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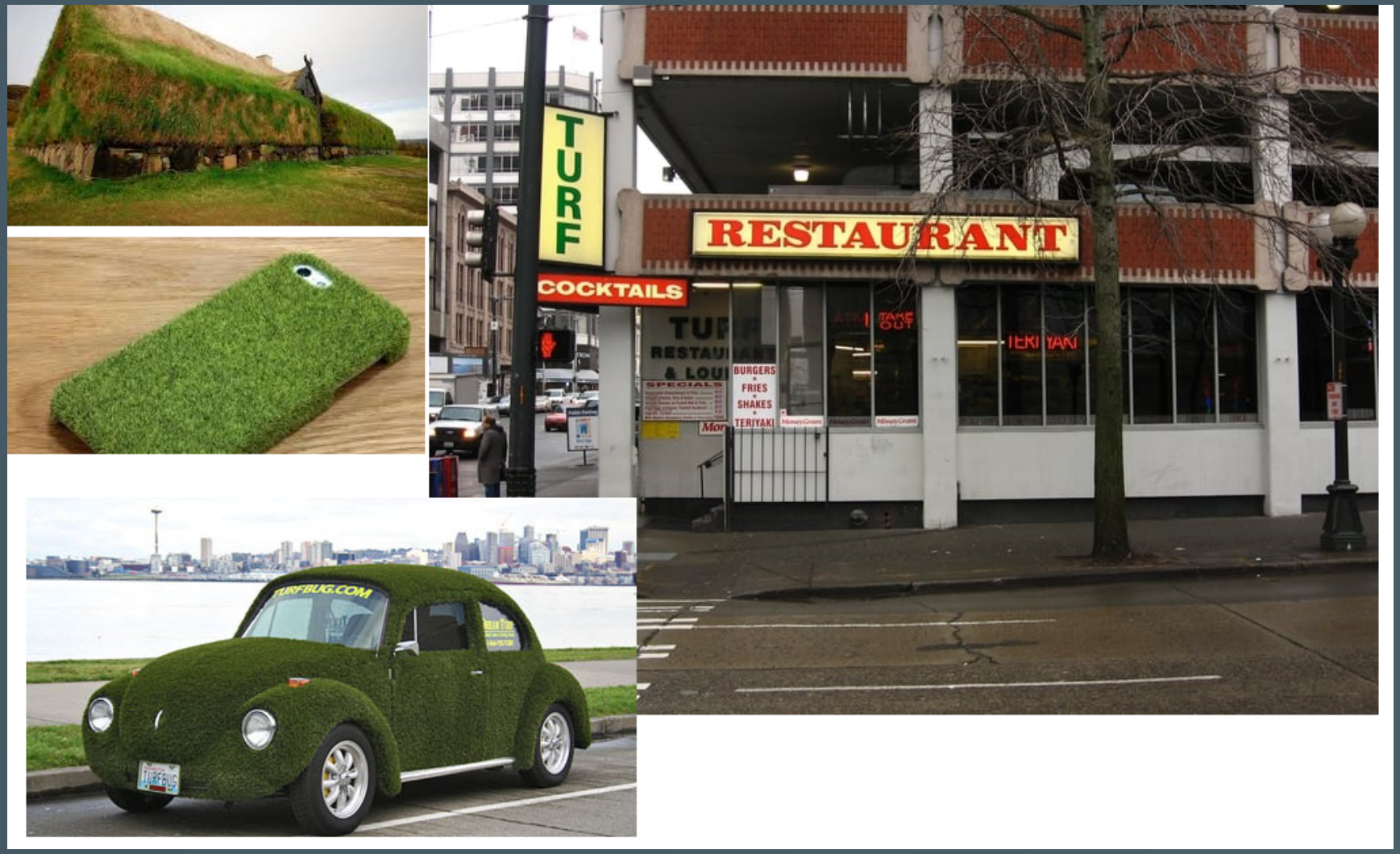
Not this


TURF
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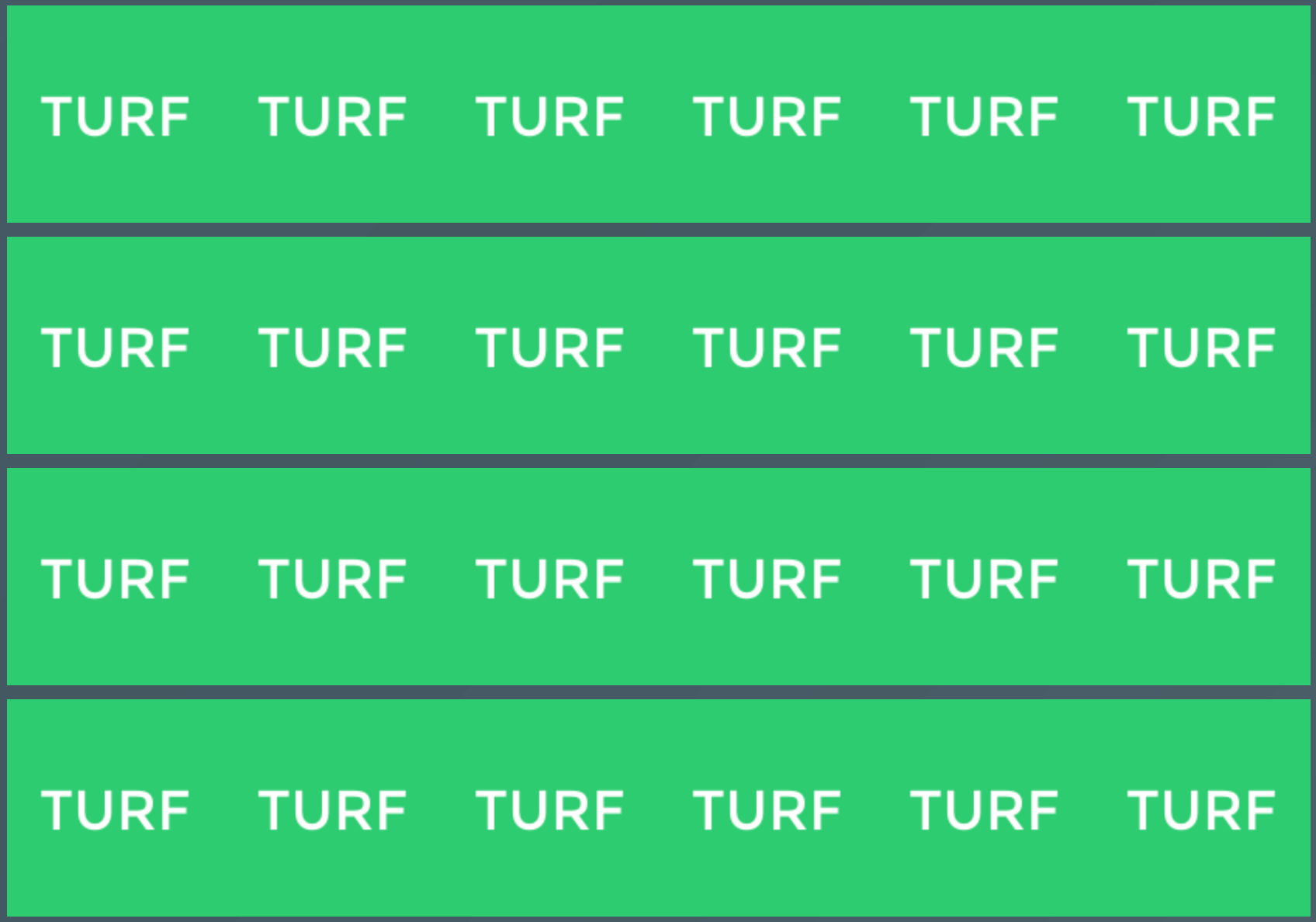
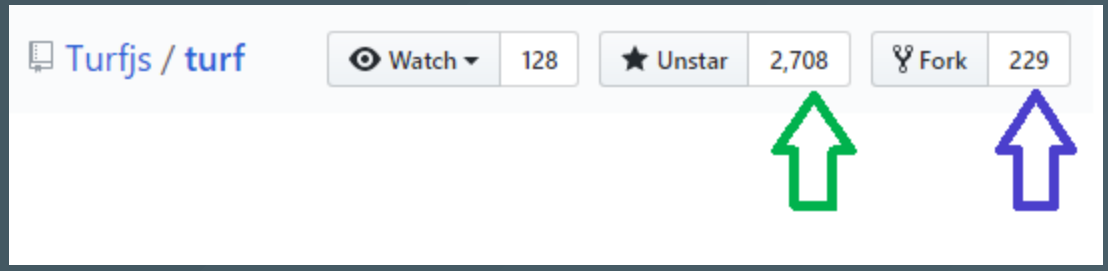


TurfJS - Modular GeoSpatial Engine

What is it?

```
Version 4.4 Released 2017-06-05, 77+ modules
```

- Lightweight JavaScript geospatial library
- Created by Morgan Herlocker
  - Denis Carriere - Active lead contributor
  - Actively maintained - 56+ contributors



- Open Source - ❤ MIT License ❤

What is it?

- Complete engine available as
  - NPM module - `npm install @turf/turf`
  - Live link - `https://npmcdn.com/@turf/turf/turf.min.js`
- Customizable build options available
- Majority of operations work with GeoJSON

TurfJS Goals

- Simple - Operations as independent functions
  - 🌍 -> TurfJS Function -> 🌎
  - Majority of functions work with GeoJSON
- Fast
  - Benchmark code available in each function folder - Example turf-centroid
- Modular
  - Functions are organized as complete units - examples, types, tests, etc

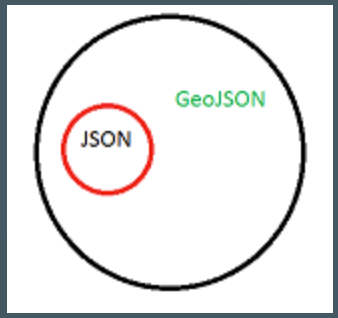
Implementation Notes

- JavaScript - Language of the modern web
  - Isomorphic - Code is the same server/client pick best location based on data
- Respect your data
  - GeoJSON datasets are often large if you need speed use the Node library on the server
- Understand your client and environments
  - Browsers, Web Servers, Connectivity

GeoJSON

Geographic JavaScript Object Notation

- Superset of JSON



Details, details, details and RFC 7946

Example

Seattle City Center - Renders from GitHub

```
{
  "type": "Feature",
  "geometry": {
    "type": "Point",
    "coordinates": [-122.3321, 47.6062]
  },
  "properties": {
    "name": "Seattle"
  }
}
```

Build your own tool geojson.io

GeoJSON

Common types from turf-helpers

```
Point, Polygon, LineString, FeatureCollection,
Feature, MultiLineString, MultiPoint,
MultiPolygon, GeometryCollection
```

Format

```
const result = turf.[theType](
[coordinates],
[properties]);
```

GeoJSON

Point Example

```
const point = turf.point(
[-122.3321, 47.6062],
{ name: 'Seattle' });
```

Creates a point at coordinates [latitude, longitude] with a name attribute of 'Seattle'

Example

GeoJSON - Common types

LineString

```
const line = turf.lineString([
  [-122.3321, 47.6062], [-122.3321, 47.8062]
], { name: 'Seattle Line' });
```

Creates a point at coordinates [latitude, longitude] with a name attribute of 'Seattle Line'

Example

GeoJSON - Common types

Polygon

```
const poly = turf.polygon([
  [
    [-122.38,47.57], [-122.28,47.57],
    [-122.28,47.62], [-122.38,47.62],
    [-122.38,47.57]
  ]
], { name: 'Seattle Box' });
```

Example

GeoJSON - Common types

FeatureCollection

```
const fc = turf.featureCollection([
  turf.point([-122.33136, 47.59909], {name: 'Seattle'}),
  turf.polygon(
  [
   [
    [-122.38,47.57], [-122.28,47.57],
    [-122.28,47.62], [-122.38,47.62],
    [-122.38,47.57]
   ]
  ], { name: 'Seattle Box' })
]);
```

Example

GeoJSON

Less common types you might use that are available

- MultiPoint
- MultiLineString
- MultiPolygon
- GeometryCollection
- Feature

Common Functions

- Aggregation
- Measurement
- Transformation
- Data methods
- Interpolation
- Join
- Classification
- Helpers

The List

Current Packages

Walkthrough

random(type, count, options)

```
const points = turf.random('points', 2,
{ bbox: [-122.3401, 47.5993, -122.3089, 47.6163] });
```

Results

```
{"type":"FeatureCollection",
"features":[{"type":"Feature","geometry":{"type":"Point","
```

How

Glitch API example with a map and TurfJS

🐣 https://turfjs-random.glitch.me/ 🐣

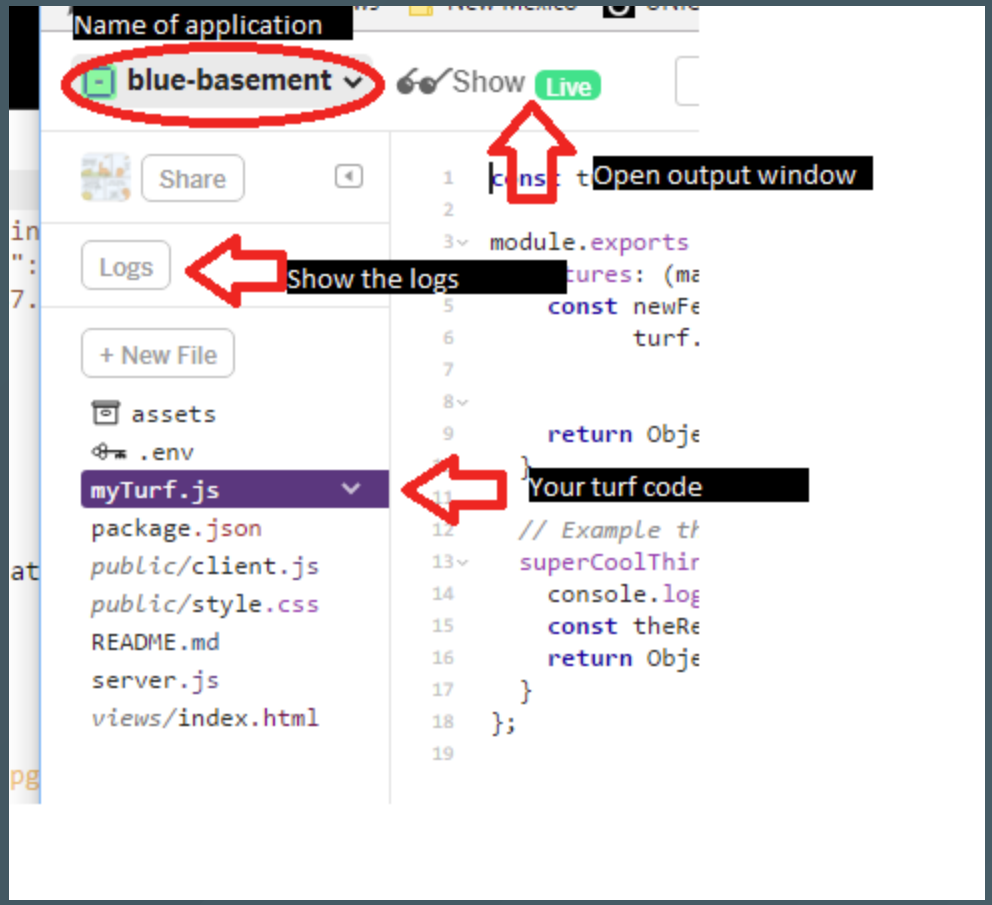
Remix Time

To make your own copy use the `Remix this in Glitch` option at the bottom of the page

Or collaborate with me on mine https://glitch.com/edit/#!/join/fad52299-6d48-47de-837b-3454041d3824

How

Writing the turfjs code in the file `myTurf.js`



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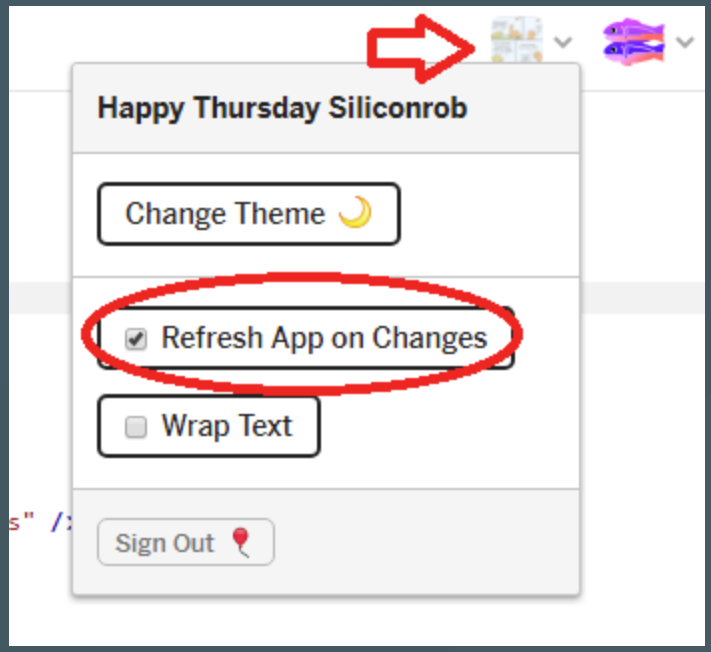

What do you want to do?

- Explode 💥 - https://turfjs-explode.glitch.me/
- Buffers 🔳 - https://turfjs-buffer.glitch.me/
- Simplify 🔧 - https://turfjs-simplify.glitch.me/
- Union/Intersect 📐 - https://turfjs-kinks.glitch.me/
- Grids - square, triangle, hex 🃏 - https://turfjs-grids.glitch.me/
- 😼 https://www.mapbox.com/blog/60-years-of-tornadoes-with-turf/

Thanks to MaptimeSEA

Presentation
https://github.com/Siliconrob/presentations/tree/master/turfjs

Recommended local data source
https://data.seattle.gov/