

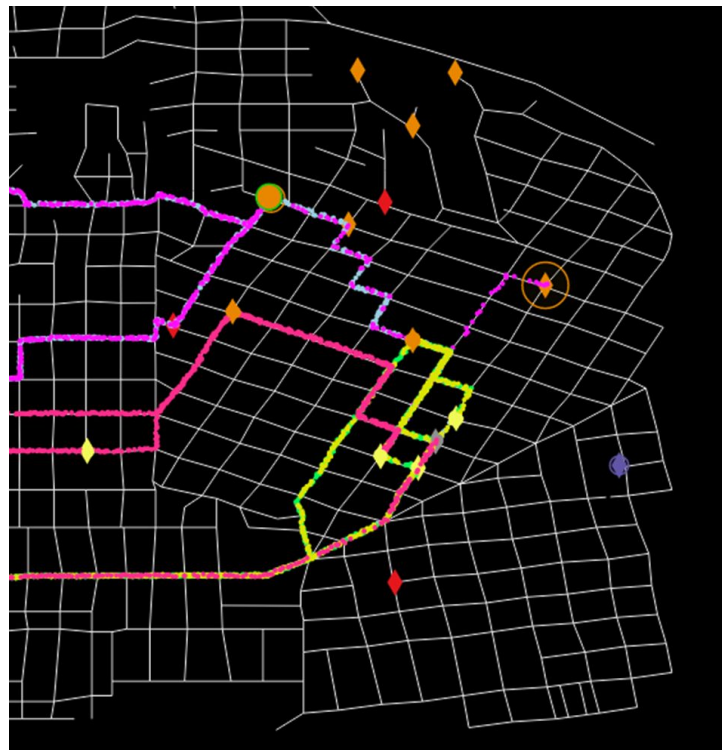
MiddGuard

Automatic Memory Management

Dana Silver

Challenges

- Long running web application
- More data in browser than usual web pages
- Flexible framework for developers



GPS Trace Map, VAST 2014 Mini Challenge 2
Christopher Andrews, Dana Silver

View Reference Counting

1. Fetch **data** in the context of a view
2. Add a **reference** to the fetching view on the data
3. Remove the **reference** when we remove the view
4. Destroy **data** when no active views are using it

middguard
entities

Bike Ride

- [middguard_views]
- other attributes

fetch()

- add cid to [middguard_views]
- add entity name to middguard_entities

middguard
modules

Map of Bike Ride

- middguard_entities
- cid
- fetch(), remove()

remove()

- remove cid from [middguard_entities]
- delete data from client if necessary
- destroy module instance

API

```
this.fetch('Gps-points', {  
  data: {ride_id: this.ride.id},    // WHERE ride_id = $id  
  remove: false                     // Keep existing collection  
});  
  
this.listenTo(middguard.entities['Gps-points'], 'sync', this.render);
```

Chromium DevTools interface showing the Profiles panel. The left sidebar contains the Profiles section with a list of heap snapshots. The main panel displays the details for the selected snapshot, including a memory graph and a list of retainers.

Profiles

HEAP SNAPSHOTS

- Snapshot 1
12.4 MB
- Snapshot 2
23.8 MB
- Snapshot 3
12.5 MB** [Save](#)

Comparison ▼ Snapshot 1

Constructor

- ▶ (compiled code)
- ▶ (array)
- ▶ (system)
- ▶ (string)
- ▼ Array
 - ▶ **Array @5415125**
 - ▶ Array @5416159
 - ▶ Array @5231917
 - ▶ Array @5233215
- ▶ Pending activities / 2 entries

Retainers

Object

- ▼ sync in @4864549
 - ▼ _events in child @4858493
 - ▼ Gps-points in @4865849
 - ▼ entities in @4827453
 - ▶ middguard in Window / localhost:3000/# @4819467
 - ▶ 1 in (object properties)[] @4935631
- ▶ l23 in @4864633
- ▶ bound_this in function native_bind() @4864803
- ▶ bound_this in function native_bind() @4864631
- ▶ bound_this in function native_bind() @4864623
- ▶ 1 in (function bindings)[] @4860995
- ▶ 1 in (function bindings)[] @4860989
- ▶ 1 in (function bindings)[] @4860983
- ▶ ctx in @4824861

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