

LOCAL SEARCH FOR TESTING RESTFUL APIS

Problem

Multi-objective optimization problem

Search for optima

Global

Local

Effective but inefficient

?

Alternating variables

From 1990, but still useful

Test case
One or more HTTP requests

Query parameters, body content

Search each in isolation

Classic hill climbing



*Only integers

Extensions for more data types

<div>Booleans</div> <div>Flip it!</div>	<div>Enumerators</div> <div>Search just like integers Assumption: small search space</div>	<div>Date / time objects</div> <div>Day / Month / Year Hour : Minute : Second</div>
<div>Floating point types</div> <div>In range of precision value</div>	<div>Arrays</div> <div>Optimize each element in isolation Search space might be large</div>	<div>Strings / complex objects</div> <div>Search space too large Instead, small local mutations</div>

Results

An average of 3 runs for 60 seconds

RANDOM - 254 branches covered

MIO - 270 branches covered

Hill Climbing - 289 branches covered

What's next?

Further improvements to consider

- Specializations for strings
- Increasing step size (2^i)
- Continue until a cycle of no further improvements
- Explore worse neighbors as well

Empirical study!