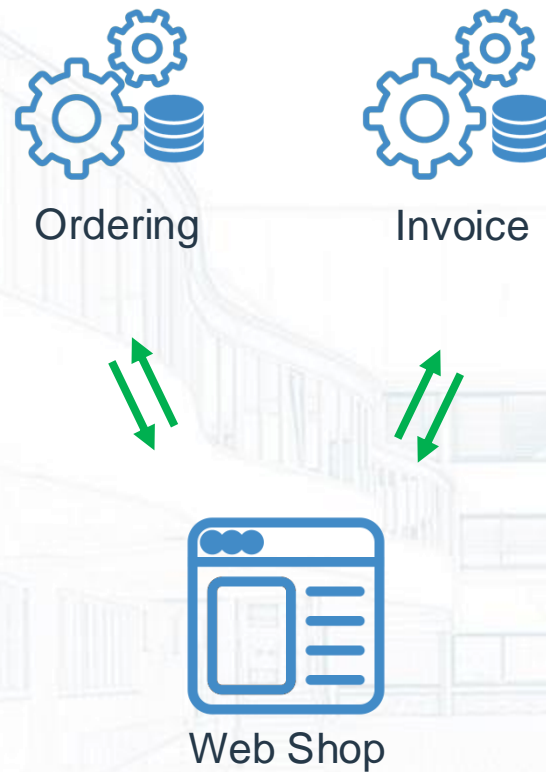


AutoGuard: Reporting Breaking Changes of REST APIs from Java Spring Boot Source Code

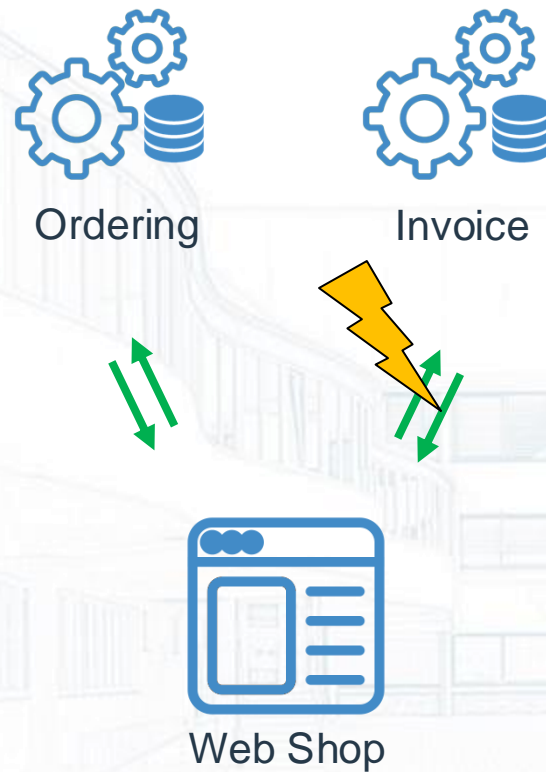
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University of Klagenfurt, Austria

{alexander.lercher, clemens.bauer, christian.macho, martin.pinzger}@aau.at

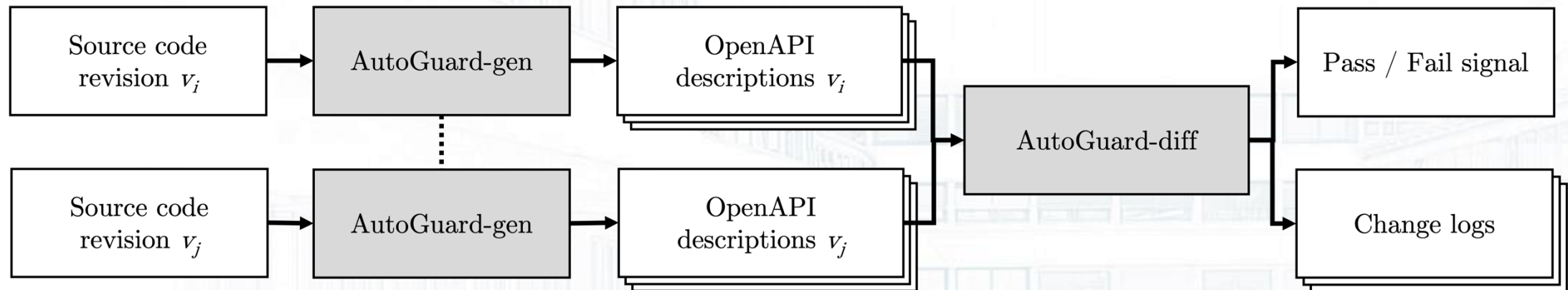
Motivation: Breaking Changes



Motivation: Breaking Changes



AutoGuard Overview



Source Code Example

```
@RestController
@RequestMapping("/customers")
public class CustomerController {

    @GetMapping
    public ResponseEntity<List<Customer>>
    getAll() {
        ...
    }

    @PostMapping
    public ResponseEntity<Customer> create(@RequestBody @Valid
    Customer customer) {
        ...
    }
}
```

```
public class Customer {

    public String name;

    public Long id;

    public String email;
}
```

Breaking Change Example

```
@RestController
@RequestMapping("/customers")
public class CustomerController {

    @GetMapping
    public ResponseEntity<List<Customer>>
    getAll() {
        ...
    }

    @PostMapping
    public ResponseEntity<Customer> create(@RequestBody @Valid
    Customer customer) {
        ...
    }
}
```

```
public class Customer {

    public String name;

    @NotNull
    public Long id;

    public String email;
}
```

Breaking Change Example

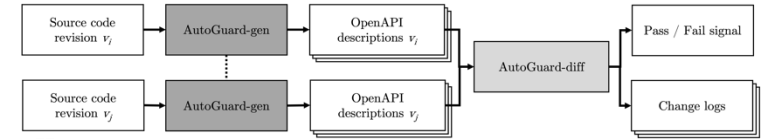
Change customer #1



Open

Developer wants to merge 1 commit into `main` from `feature` 

AutoGuard-gen



```
@RestController  
@RequestMapping("/customers")  
public class CustomerController {
```

```
@GetMapping
```

```
public ResponseEntity<List<Customer>>  
getAll() {  
    ...  
}
```

```
@PostMapping
```

```
public ResponseEntity<Customer> create(@RequestBody @Valid  
Customer customer) {  
    ...  
}
```

customer-controller

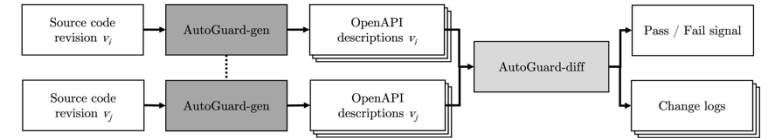
GET /customers getAll

POST /customers create

Schemas

```
Customer {  
  name string  
  id integer($int64)  
  email string  
}
```


AutoGuard-gen



```
public class Customer {
```

```
    public String name;
```

```
    public Long id;
```

```
    public String email;
```

```
}
```

customer-controller

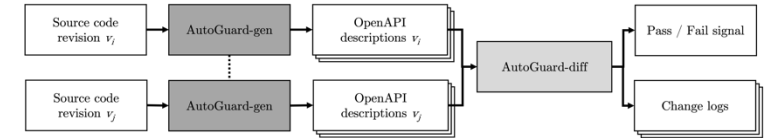
GET /customers getAll

POST /customers create

Schemas

```
Customer {
  name      string
  id        integer($int64)
  email     string
}
```

AutoGuard-gen



```
public class Customer {
```

```
    public String name;
```

```
    @NotNull
```

```
    public Long id;
```

```
    public String email;
```

```
}
```

customer-controller

```
GET /customers getAll
```

```
POST /customers create
```

Schemas

```
Customer {
```

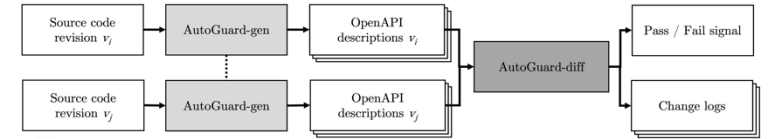
```
  name string
```

```
  id* integer($int64)
```

```
  email string
```

```
}
```

AutoGuard-diff



customer-controller

GET /customers getAll

POST /customers create

Schemas

```
Customer {
  name string
  id integer($int64)
  email string
}
```

customer-controller

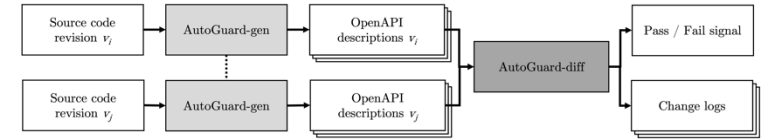
GET /customers getAll

POST /customers create

Schemas

```
Customer {
  name string
  id* integer($int64)
  email string
}
```


AutoGuard



✖ All checks have failed

1 failing check

[Hide all checks](#)

✖  `.github/workflows/autoguard.yml / autoGuard (pull_request)` Failing after 58s

[Details](#)

✔ This branch has no conflicts with the base branch

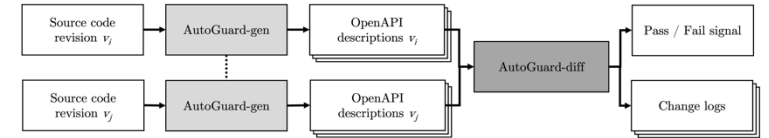
Merging can be performed automatically.


Merge pull request






You can also [open this in GitHub Desktop](#) or view [command line instructions](#).

AutoGuard



 **All checks have failed**
1 failing check

  **.github/workflows/aut**

 **This branch has no c**
Merging can be performed

Merge pull request

```
autoGuard
failed 1 minute ago in 58s

Run MSA-API-Management/AutoGuard@v1
375 =====
376 == API CHANGE LOG ==
377 =====
378 project
379 -----
380 -- What's Changed --
381 -----
382 - GET /customers
383 Return Type:
384 - Changed 200 OK
385 Media types:
386
387 - POST /customers
388 Request:
389 - Changed application/json
390 Schema: Broken compatibility
391
392 - Changed 200 OK
393 Media types:
394 - Changed application/json
395 Schema: Backward compatible
396
397 -----
398 -- Result --
399 -----
```

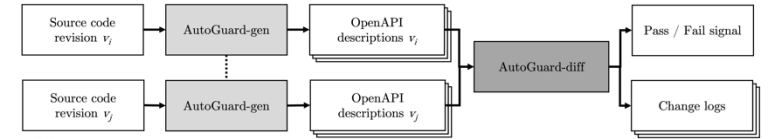
[Hide all checks](#)

[Details](#)

[actions.](#)

```
-----
-- Result --
-----
API changes broke backward compatibility
-----
```


AutoGuard



✘ All checks have failed

1 failing check

[Hide all checks](#)

✘  `.github/workflows/autoguard.yml / autoGuard (pull_request)` Failing after 58s

[Details](#)

✔ This branch has no conflicts with the base branch

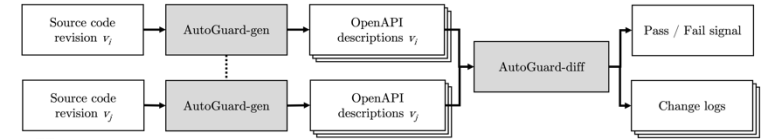
Merging can be performed automatically.

Merge pull request



You can also [open this in GitHub Desktop](#) or view [command line instructions](#).

AutoGuard



<https://github.com/MSA-API-Management/AutoGuard>