

Digestive Functors 0.3

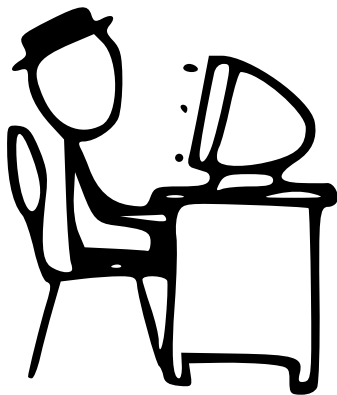
GhentFPG

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Hello!

My name is Jasper
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Overview

What are formlets?

digestive-functors

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What are formlets?

Coined in a 2008 paper

The essence of form abstraction

Ezra Cooper, Sam Lindley, Philip Wadler, and Jeremy Yallop.

Haskell library by Chris Eidhof

What are formlets?

Idea: forms written using an *Applicative Functor* approach are *inherently composable*.

What are formlets?

```
data Date = Date  
  { month  :: Integer  
    , day   :: Integer  
  } deriving (Show)
```

What are formlets?

```
validDate :: Date -> Bool  
validDate (Date m d) =  
    m 'elem' [1 .. 12] &&  
    d 'elem' [1 .. 31]
```

What are formlets?

```
dateForm' :: Form Date
```

```
dateForm' = Date
```

```
  <$> inputIntegerF (Just 1)
```

```
  <*> inputIntegerF (Just 16)
```

```
dateForm :: Form Date
```

```
dateForm = dateForm' 'check'
```

```
  ensure validDate
```

```
  "This is not a valid date"
```


What are formlets?

Composability?

dateForm :: Form Date

inputIntegerF (**Just** 1)
:: Form **Integer**

What are formlets?

```
data User = User  
  { name      :: String  
  , password  :: String  
  , birthdate :: Date  
  } deriving (Show)
```

What are formlets?

userForm :: Form User

userForm = User

<\$> inputF **Nothing**

<*> passwordF **Nothing**

<*> dateForm

Overview

What are formlets?

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digestive-functors

Released in 2010

A number of practical improvements
in comparison to formlets

Similar API, completely different
internals

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Allow user to click label instead of (small) checkbox

```
<label for="checkbox">
```

Label :

```
</label>
```

```
<input type="checkbox"  
id="checkbox" />
```

digestive-functors

Error type in formlets:

[**String**]

Error type in digestive-functors:

[`ErrorDescription`] \rightarrow `Html`

digestive-functors

In formlets:

Cannot parse age

Name:

Age:

digestive-functors

In digestive-functors:

Name:

Age:

Cannot parse age

digestive-functors

Problems:

Sometimes hard to use

Suffered from TMTVA* Syndrome

Complicated implementation

**Too Many Type Variables, Aaargh!*

Overview

What are formlets?

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What I've been working on for some weeks

Attempts to overcome the main drawback of formlets

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```
foo :: Form User
```

Specifies the *validation rules* as well
as the *HTML layout*

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Separation of concerns

- ▶ Create multiple representations for a single form
- ▶ Cleaner validation rules code
- ▶ Use different HTML templating engines

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Disadvantage: some loss of type-safety

Probably impossible to have a type-safe coupling of view and validation rules without losing flexibility or ease-of-use

Explanation does not fit on this slide

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```
dateForm ' :: Form Date
```

```
dateForm ' = Date
```

```
  <$> "month"  .: stringRead '
```

```
  <*> "day"    .: stringRead '
```

where

```
  stringRead ' = stringRead
```

```
    "Can't parse"
```


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```
dateForm :: Form Date
dateForm = check
    " This _is_ not _a_ valid _date_"
    validDate
    dateForm '
```

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```
dateView view = do
  errorList "month" view
  label "month" view "Name: _"
  inputText "month" view
H.br

  errorList "day" view
  label "day" view "Email: _"
  inputText "day" view
H.br
```

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Composability

userForm :: Form User

userForm = User

<\$> "name" :: string'

— *Password is just a string!*

<*> "password" :: string'

<*> "birthdate" :: dateForm

where

string' = string **Nothing**

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```
userView :: View Html -> Html
```

```
userView view = do
```

```
  label "name" view "Name: _"
```

```
  inputText "name" view
```

```
  H.br
```

```
  label "name" view "Name: _"
```

```
  inputPassword "name" view
```

```
  H.br
```

```
  ...
```

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```
userView :: View Html -> Html
```

```
userView view = do
```

```
...
```

```
  label "birthdate.month"
```

```
    view "Month: _"
```

```
  inputText "birthdate.month"
```

```
    view
```

```
  H.br
```

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```
userView :: View Html -> Html
```

```
userView view = do
```

```
...
```

```
  dateView $
```

```
    subView "birthdate" view
```

Demo