Functional Programming for rubyists

Bianca Gibson

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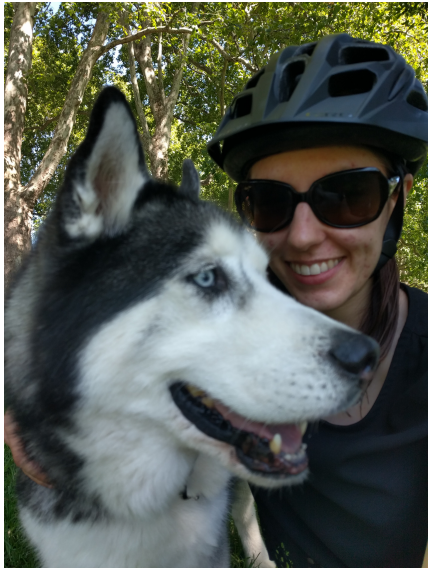
Rampant side effects

Shifting sands of mutable state beneath your feet

Enter Functional Programming



What should you get out of this?

- What is the core of FP?
- How can it help with problems you've experienced?
- How to use it in ruby projects you're already working on
- It's not that hard and complicated
- No neckbeard required

What will we cover

- Immutability
- Putting off side effects
- Referential transparency
- Common traps when explaining to others and avoiding them
- How to learn more

Stop things changing behind my back

Immutability

- Don't change any values, use only constants
- Instead of changing create a new one
- Recursion and accumulators over loops and mutation
- Confusion over passing by value or reference? Gone.
- Ever thought about using a ! or not? That's worrying about mutation

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Immutability example – fibonacci

$F_0 = 0,\ F_1 = 1$
$F_n = F_{n-1} + F_{n-2}$

What are side effects?

- When your code affects the outside world
- Printing
- Writing to disk
- Network calls

What do they have to do with FP?

- Separate your logic from your side effects
- Push your side effects out in to the edge of your system
- In the middle of your system make representations of the side effects
- Makes the core easier to test and reason about
- No side effects to stub $\rightarrow$ simpler tests
- Push hard testing out to the edge

Example

Referential transparency

- The combination of immutability and no side effects
- When you call a function again you get the same result
- Includes no side effects
- You can substitute the saved result of the function for the call
- Everything a function does is represented by the result
- Nothing unexpected!

Example

Teaching FP

- Don't get too mathematical
- Relate to stuff they already know
- Focus on examples
- Avoid the scary words like monad until they understand it
- Focus on advantages to them
- Pick your battles

Learning more

- Functional Programming Principles in Scala on coursera
- Functional programming in Scala by Paul Chiusano and Rúnar Bjarnason
- Refactoring Ruby with Monads by Tom Stuart
- github.com/cwmyers/FunctionalTraining
- github.com/NICTA/course
- If you're after concepts, go for concept oriented resources
- Try multiple sources before you find one for you
- If it seems really hard, probably the resource, not you.

Questions?

Stop things changing behind our backs