Parallel Functional Programming

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Instructor

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primes = filterPrime [2..]
    where filterPrime (p:xs) =
          p : filterPrime [x | x <- xs, x `mod` p /= 0]
Prerequisites

- Data structures (COMS W3134, W3137, or equivalent)
  - You must be fluent in at least one programming language
    - Java
    - C
    - Python

- You must dream about lists and trees

- You do not need prior experience in a functional programming language; that’s what this course is for
Assignments and Grading

75 % Five individual homework assignments
25 % Final Project (alone or in pairs)

This is a coding\textsuperscript{†} class

Do the homework assignments alone

The project may be done alone or in pair

\textsuperscript{†}More precisely, mostly debugging, with a little bit of bugging
Collaboration

You may seek outside help, including from other students, on homework, but

- **You must write all** of your own code. No copying or copying-with-modification of any code. No looking at other student’s code as reference as you write your own.
- **You must cite** all people and resources you consulted. For example, you might add a comment like

```haskell
{- I collaborated with Haskell Curry, Jim Backus, Alonzo Church, and Grace Hopper on this assignment, and consulted
http://hackage.haskell.org/package/base-4.12.0.0/docs/Data-List.html
https://stackoverflow.com/questions/211216
http://www.cis.upenn.edu/~cis194/fall16/policies.html
-}
```

Recommended Texts

Miran Lipovača.  
Learn You a Haskell for Great Good!  

http://learnyouahaskell.com/

Excellent introductory text. We will be following it for roughly the first half of the class.
Simon Marlow.  
Parallel and Concurrent Programming in Haskell.  
O’Reilly, 2013.  

https://simonmar.github.io/pages/pcph.html

Like its title says. Assumes a reasonable understanding of Haskell. We will be following it for the second half of the class.

http://book.realworldhaskell.org/

Also an introductory text on Haskell that starts at the beginning, it quickly focuses on practical, real-world aspects of writing Haskell programs, such as elaborate I/O, and interfacing with external libraries.
Recommended Texts

Paul Hudak.
The Haskell School of Expression.

http://www.cs.yale.edu/homes/hudak/SOE/

An idiosyncratic approach to learning Haskell based on multimedia (graphics, animation, and sound) ultimately leading to domain-specific languages.
http://www.cs.nott.ac.uk/~pszgmh/pih.html

Another introductory Haskell text, this one written by a professor from the University of Nottingham.
Will Kurt.
Get Programming with Haskell.
Manning, 2018.

https://www.manning.com/books/get-programming-with-haskell

Another introductory Haskell text, written more like a textbook