

Thomas Ball, Benjamin Zorn (Microsoft):  
Teach Foundational Language Principles -  
Industry is ready and waiting for more graduates educated in the  
principles of programming languages  
Communications of the ACM, 58(3), 2015

Thomas Ball, Benjamin Zorn (Microsoft):  
Teach Foundational Language Principles -  
Industry is ready and waiting for more graduates educated in the  
principles of programming languages  
Communications of the ACM, 58(3), 2015

*Second, would-be programmers (CS majors or non-majors) should be exposed as early as possible to functional programming languages to gain experience in the declarative programming paradigm. The value of functional/declarative language abstractions is clear: they allow programmers to do more with less and enable compilation to more efficient code across a wide range of runtime targets.*

Thomas Ball, Benjamin Zorn (Microsoft):  
Teach Foundational Language Principles -  
Industry is ready and waiting for more graduates educated in the  
principles of programming languages  
Communications of the ACM, 58(3), 2015

*First, computer science majors, many of whom will be the designers and implementers of next-generation systems, should get a grounding in logic, its application in design formalisms, and experience the creation and debugging of formal specifications with automated tools. . .*

# Anwendung funktionaler Sprachen

## Anwendung funktionaler Sprachen

### Facebook:

- ▶ Sigma: automatische regelbasierte Erkennung von Spam u.ä.
- ▶ wurde in Haskell neu implementiert
- ▶ verarbeitet mehr als eine Million Anfragen pro Sekunde

<https://code.facebook.com/posts/745068642270222/fighting-spam-with-haskell/>

**WhatsApp:** implementiert in Erlang

**X/Twitter:** verwendet funktionale Konzepte aus Scala

...

↪ Webseite zur Vorlesung

## Anwendung logischer Sprachen

## Anwendung logischer Sprachen

### IBM:

- ▶ Watson: KI-Programm zur Beantwortung von Fragen in natürlicher Sprache
- ▶ Quizsendung Jeopardy (Feb. 2011): gewann gegen zwei menschliche Gegner
- ▶ Sprachverarbeitung mit Prolog

[https://de.wikipedia.org/wiki/Watson\\_%28K%C3%BCnstliche\\_Intelligenz%29](https://de.wikipedia.org/wiki/Watson_%28K%C3%BCnstliche_Intelligenz%29)

<http://www.cs.nmsu.edu/ALP/2011/03/>

[natural-language-processing-with-prolog-in-the-ibm-watson-system](#)

## Anwendung logisch-funktionaler Sprachen

### Moduldatenbank des Instituts:

<https://moduldb.informatik.uni-kiel.de/>

- ▶ einfachere APIs zur Web-Programmierung
- ▶ typsichere Datenbankprogrammierung



## Nutzung von funktionaler Programmierung

Neil Savage: *Using Functions for Easier Programming*

Communications of the ACM, 61(5), 2018, 29–30