

Introduction to LLVM compiler framework

Course outline

Stefano Cherubin

Politecnico di Milano

03-05-2019

Welcome slides

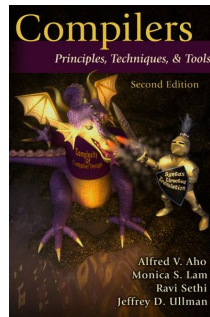
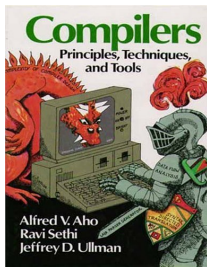


About the dragon

- The **LLVM logo** [?] is a stylized wyvern (a kind of dragon). Dragons have connotations of power, speed and intelligence, and can also be sleek, elegant, and modular (err, maybe not).

About the dragon

- The **LLVM logo** [?] is a stylized wyvern (a kind of dragon). Dragons have connotations of power, speed and intelligence, and can also be sleek, elegant, and modular (err, maybe not).
- There is a series of **compiler books** dating back to the 1970s showing illustrations with dragons and knights [?] [?] [?]



About me

Stefano Cherubin

- stefano.cherubin@polimi.it
- PhD candidate @ Politecnico di Milano (Italy)
- working on compilers since not so long time
- definitely not an experienced knight...

About me

Stefano Cherubin

- stefano.cherubin@polimi.it
- PhD candidate @ Politecnico di Milano (Italy)
- working on compilers since not so long time
- definitely not an experienced knight...
- ...I'm more like a lazy Hobbit



About you

In order to fully understand the content of this course you should have:

- knowledge of what a compiler is
- proficiency in most common data structures
- proficiency in Object-Oriented Programming
- at least some experience with C++

About the course

1 First part

- Compiler design
- LLVM structure overview
- LLVM-IR language

2 Second part

- LLVM Documentation
- Available middle-end passes (overview)
 - Normalization
 - Analysis
- LLVM quick start tutorial (depending on time)

Goal of the course

At the end of these lectures you should:

- understand the LLVM compiler infrastructure
- be able to read a .ll file (LLVM-IR)
- know where to look for documentation
- know which are the main middle-end weapons LLVM provides you out of the box
- know how to implement a simple analysis / transformation
- know how to test your code

Bibliography I