Open Source Formal Verification

Introduction/Content

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Who?

- Professor: Yann Thoma
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Short CV

- 2001: Master in computer science at EPFL
- 2005: PhD EPFL (reconfigurable systems)
- 2005-2009: lecturer at l'EIG (hepia) (digital systems, proc. architecture)
- 2006-2008: Engineer for the Group of Applied Physics (UniGe)
- 2006-2008: Engineer at REDS (HEIG-VD)
- 2009- : Professor at REDS
  - Teaching digital systems, verification of embedded systems, concurrent programming and realtime programming
  - Various research projects (FPGA development, embedded systems, pharmacology)
- 2015-2018 : Director of REDS
- 2018-2019 : Visiting professor at UNSW

Planning - day 1

Time	Description	Type
9:00	Introduction	Theory
9:15	Introduction to verification	Theory
10:15	Break	
10:30	Introduction to formal verification	Theory (and an exercise)
11:30	Basic PSL constructs	Theory
12:15	Combinational systems	Exercise
12:30	Lunch	
13:45	Combinational systems	Exercise
14:45	Temporal logic	Theory
15:30	Verification of a counter	Exercise
16:00	Break	
16:15	Verification of a timer	Exercise
17:00	Verification of a state machine	Exercise
18:00	End of the day	

Planning - day 2

Time	Description	Type
8:30	Regular expressions	Theory
9:15	Regular expressions	Exercise
10:15	Break	
10:30	Axi module	Exercise
12:00	Lunch	
13:15	Parametric design	Theory
13:30	Coverage	Theory
13:45	Coverage	Exercise
14:15	Helper code and variables	Theory
14:45	Helper code and variables	Exercise
15:15	Break	
15:30	Helper code and variables	Exercise
16:00	Backends	Theory
16:30	Backends	Exercise
17:30	End of the day	

Planning - day 3

Time	Description	Type
8:30	Continuous integration and scripts	Theory
8:45	Continuous integration and scripts	Exercise
9:15	Methodology insights	Theory
10:15	Break	
10:30	Use cases	Exercise and discussions
12:00	Lunch	
13:00	Use cases	Exercise and discussions
15:00	Break	
15:15	Use cases	Exercise and discussions
17:30	End of the day	

Training Material

You can get all the material on the following git repo:
`https://reds-gitlab.heig-vd.ch/reds-public/formal-cern-25`

- Theory
  - Slides
  - Code examples
- Exercises
  - Statements
  - Code