Karl Palmskog

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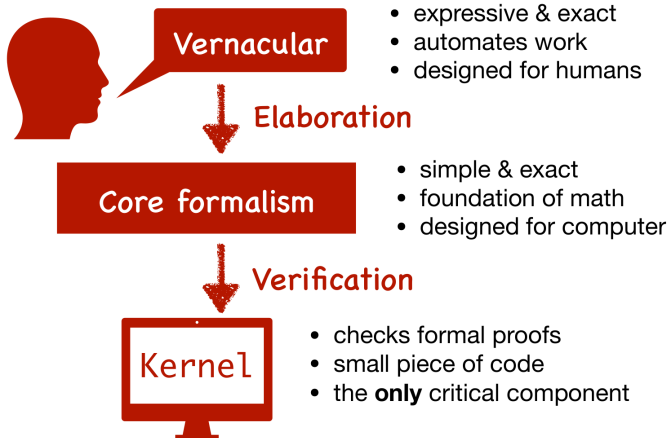
Theoretical Computer Science, EECS, KTH

About Karl Palmskog

- Ph.D., Computer Science, KTH, 2014
- Postdoc, University of Illinois, 2015-2017
- Postdoc, University of Texas, 2018-2019
- Researcher, KTH, 2019-2021
- Lecturer, KTH, 2021-
- Primary research areas:
  - programming languages
  - program verification
  - proof engineering
  - distributed systems

Primary tool: proof assistants

The anatomy of a proof assistant

Vernacular
- expressive & exact
- automates work
- designed for humans

Elaboration

Core formalism
- simple & exact
- foundation of math
- designed for computer

Verification

Kernel
- checks formal proofs
- small piece of code
- the **only** critical component

Recent work

```
Theorem OoO_IO_well_formed_memory_consistent:
 !pi. well_formed_initialized_state (FST (HD pi)) ==>
  step_execution out_of_order_step pi ==>
  ?pi'. step_execution in_order_step pi' /\
   FST (HD pi') = FST (HD pi) /\
   !a. commits pi a <<= commits pi' a
Proof
...
QED
```