Outline (tentative!)

(2/6) Administration (GS, JB)
(2/8) Introduction, Jonathan’s view. (JB)
(2/13) Interpreters and VM’s. (JB, GS)
  • Source
  • CPS
  • Pretreated
  • Instruction decode loop
  • Threaded VM’s
  • Cached instructions
  • AST-based
  • VVM’S

(2/15) Objects and Types (GS)
  • Simple types
  • Record types, recursive types, self types
  • Adding subtyping
  • Typechecking

(2/22) Multiple Dispatch, Predicate Types, Predicate Dispatch (GS)
(2/27) Paper Presentations (students)
(3/1) Runtime Object Systems (JB)
  • Calling conventions
  • Tagging
  • Fast instance?
  • Dispatch
  • Redefinition

(3/6) Runtime Object Systems, cont’d. (JB)
(3/8) Reflection (GS)
  • Meta-object protocols (MOPs)
  • Reflective interpreters

(3/13) Memory Management (JB or guest)
  • Basic GC
  • Generational
  • Incremental
  • Conservative

(3/15) Intro. to Athena (KA)

Tuesday, 2/20, is a Monday class schedule, so our class will not meet. However, the New England Programming Languages Seminar (www.nepls.org) will be meeting at Boston University on Tues., 2/20, and students are encouraged to attend if possible.

(2/22) Introduction, Kostas’s view. (KA)
Week 8 (3/27, 3/29)

(3/27, 29) Spring Vacation ()

Week 9 (4/3, 4/5)

(4/3) Using Athena (Type Inference, Cont’d) (KA)

(4/5) Partial Evaluation (GS)
- Online
- Offline
- Runtime
- Dynamic
- Explicitly staged compilation

Week 10 (4/10, 4/12)

(4/10) Macros (JB)
- Macro calls
- Macro expansion
- Hygiene
- Macro systems
- Macros for conventional syntax

(4/12) OO Optimization (JB)
- Code splitting
- Specialization
- Dispatch
- Inlining

Week 11 (4/17, 4/19)

(4/17) No class (Patriots Day) ()

(4/19) Paper Presentations (students)

Week 12 (4/24, 4/26)

(4/24) Panel - Compilation (distinguished guests)

(4/26) OO Optimization, cont’d (JB)

Week 13 (5/1, 5/3)

(5/1) Proof-Based Compilation (KA)
- Credible compilation
- Compilation as side effect of proof

(5/3) Dynamic Compilation (GS, JB)
- Link-time
- Load-time
- Profile guided

Week 14 (5/8, 5/10)

(5/8) Type Inference for OO (GS)

(5/10) Panel - Language Design (distinguished guests)

Week 15 (5/15, 5/17)

(5/15) Practical Aspects (JB)
- Compilation to-c
- Bootstrapping
- Basic
- Redef
- Compilation model
- FFI model

(5/17) Interoperability (JB)