

Practical performance enhancements to the evaluation model of the Hazel programming environment

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A programming language is a specification

[TODO: semantics]

[TODO: syntax]

A brief primer on the λ -calculus

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The Hazel programming environment

Hazelnut: A bidirectionally-typed static semantics

Hazelnut Live: A bidirectionally-typed dynamic semantics

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Evaluation using environments vs. substitution

Updated evaluation rules

Handling recursion

Matching the result from evaluation using substitution

Memoizing by environments for substitution and equality checking

Generalized closures

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Motivating example

Hole instances vs. hole closures/instantiations

Hole instance parent vs. hole closure parents

The hole numbering algorithm

A unified postprocessing algorithm

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Motivating example

The FAR process

1-step vs. n -step FAR

Detecting a valid fill operation

The fill operation

The resume operation

The postprocessing operation

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Evaluation with environments

Hole numbering motivating example

FAR motivating example

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Generalized closures

Unique hole closures

FAR as a generalization of evaluation

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Completion of n -step FAR

Generalized memoization

Formal evaluation of metatheory

Conclusions

References

[TODO: include metatheory]