

Seminar Report
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**TypeDevil: Dynamic Type Inconsistency
Analysis for JavaScript**

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Table of Contents

1	Context and Motivation	3
2	Overview and Example	3
3	Approach	6
3.1	Definitions	6
3.2	Gathering Type Observations	6
3.3	Building the Type Graph and Identifying Inconsistent Types....	6
3.4	Merging and Pruning of Warnings	6
4	Evaluation	6
5	Related Research	6
6	Static Type Checkers as an Alternative to Dynamic Analysis	6
6.1	General Approach of Static Type Checkers	6
6.2	Comparison between TypeDevil and TypeScript	6
	Introduction to TypeScript	6
	Evaluation Setup	6
	Results.....	7
7	Conclusion	7

1 Context and Motivation

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$$\psi(u) = \int_o^T \left[\frac{1}{2} (\Lambda_o^{-1}u, u) + N^*(-u) \right] dt. \quad (1)$$

Equations should be punctuated in the same way as ordinary text but with a small space before the end punctuation mark.

The superscript numeral used to refer to a footnote appears in the text either directly after the word to be discussed or – in relation to a phrase or a sentence – following the punctuation sign (comma, semicolon, or period). Footnotes should appear at the bottom of the normal text area, with a line of about 2 cm set immediately above them.¹

Program listings or program commands in the text are normally set in typewriter font, e.g., CMTT10 or Courier.

Example of a Computer Program

```
program Inflation (Output)
{Assuming annual inflation rates of 7%, 8%, and 10%,...
 years};
const
  MaxYears = 10;
var
  Year: 0..MaxYears;
  Factor1, Factor2, Factor3: Real;
begin
  Year := 0;
  Factor1 := 1.0; Factor2 := 1.0; Factor3 := 1.0;
  WriteLn('Year  7% 8% 10%'); WriteLn;
  repeat
    Year := Year + 1;
    Factor1 := Factor1 * 1.07;
    Factor2 := Factor2 * 1.08;
    Factor3 := Factor3 * 1.10;
    WriteLn(Year:5,Factor1:7:3,Factor2:7:3,Factor3:7:3)
  until Year = MaxYears
end.
```

(Example from Jensen K., Wirth N. (1991) Pascal user manual and report. Springer, New York)

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3 Approach

3.1 Definitions

3.2 Gathering Type Observations

3.3 Building the Type Graph and Identifying Inconsistent Types

3.4 Merging and Pruning of Warnings

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4 Evaluation

5 Related Research

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6 Static Type Checkers as an Alternative to Dynamic Analysis

6.1 General Approach of Static Type Checkers

6.2 Comparison between TypeDevil and TypeScript

Introduction to TypeScript

Evaluation Setup

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7 Conclusion

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