

CONCODE: Mapping Language to Code in Programmatic Context



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Overview

Mapping NL to Code depends significantly on programmatic context, such as the class that the code would reside in.

```
public class SimpleVector
    implements Serializable {
```

```
    double[] vecElements;
    double[] weights;
```

```
    /* Adds a scalar to this vector in place */
```

```
    public void add(final double arg0) {
        for ( int i = 0; i < vecElements.length; i++ ) {
            vecElements[i] += arg0;
        }
    }
```

NL → Code

```
    /* Increments this vector */
```

```
    public void inc() {
        this.add(1);
    }
}
```

Environment

Task

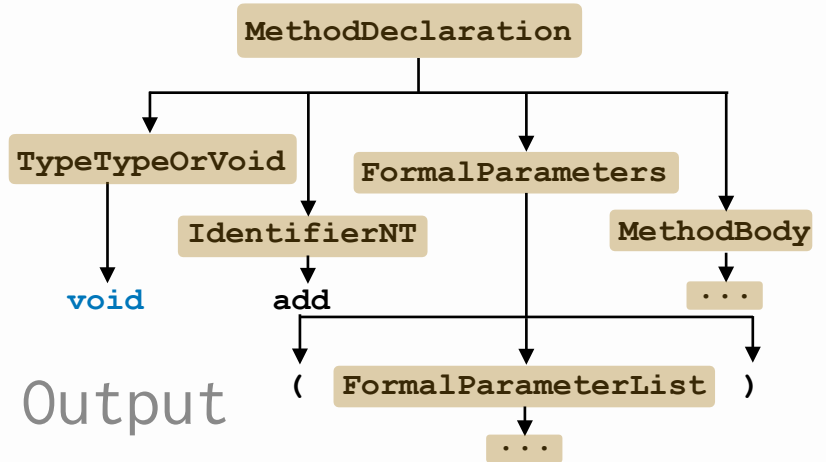
Adds a scalar to this vector in place

```
double[] vecElements;
double[] weights;
```

Input

```
void inc()
```

```
float dotProduct(SimpleVector other)
float multiply(float scalar)
```



Output

Concode

GitHub → 33000 Java repositories

TRAIN

DEV

TEST

100,000 (Context, NL, Code)

2,000

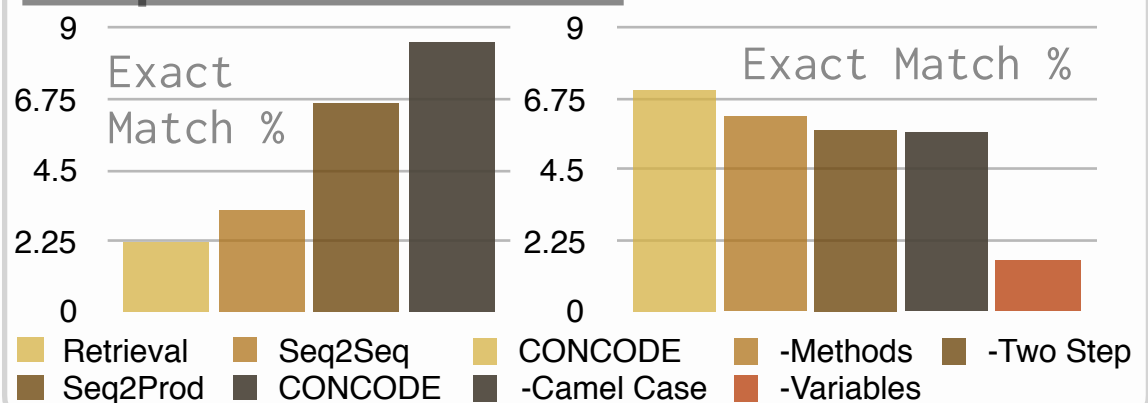
2,000

Avg # Tokens: 27 % using context variables: 68%

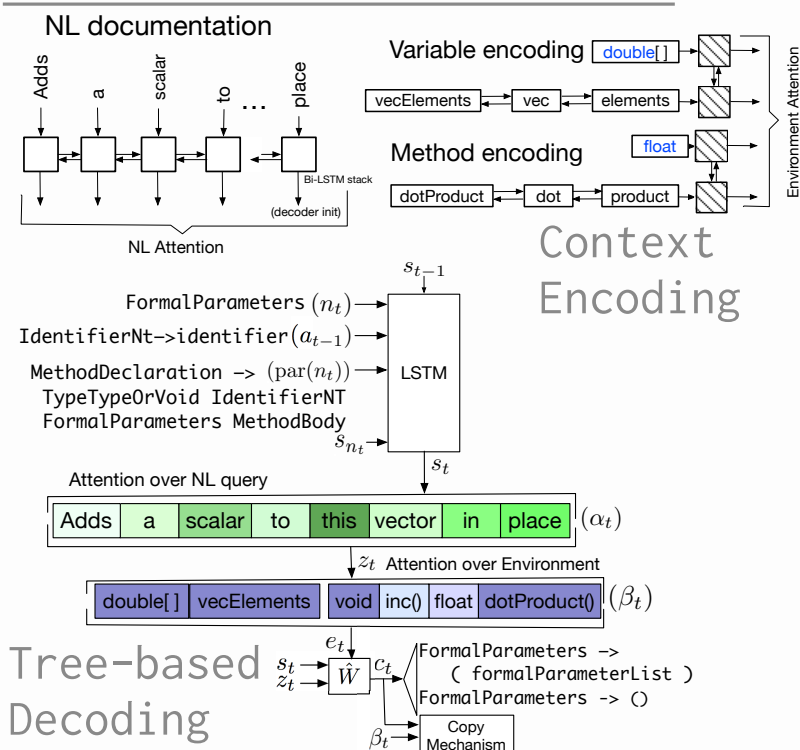
Avg AST Nodes: 80 % using context methods: 16%

Data and Code: <https://github.com/sriniyer/concode>

Experiments



Encoder-Decoder Model



Examples

Gets the value of the tags property. This accessor method returns a reference to the live list.

```
String validationPattern;
List<String> tags;

String getValidationPattern()
void setValidationPattern()

List<String> function() {
    if ( tags == null ) {
        tags = new ArrayList<String>();
    }
    return this.tags;
}
```

Returns the execution data store with data for all loaded classes.

```
SessionInfoStore sessionInfos;
ExecutionDataStore executionData;

void load()
SessionInfoStore getSessionInfoStore()
void save()

ExecutionDataStore function () {
    return executionData ;
}
```

Convert mixed case to underscores.

```
NamingStrategy INSTANCE;

String classToTableName()
String collectionTableName()
String tableName()
String columnName()
String addUnderscores()
```

Empty the violations list.

```
long numPptEntries;
List<Violation> violations;

void function () {
    violations.clear();
}
```

```
void function () {
    violations =
        new ArrayList<Violation>();
}
```