

# Weekly Progress Update

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# Overview

- Identifying classes for which translate functions have not been implemented.
- Adding codegen support to those aforementioned classes.
- Benchmarking.
- Implementing Support for Benchmarks not currently supported.

# Identifying Classes

Identified classes for which translate function i.e code generation as an evaluation backend is not implemented yet.

| Tutorial # | Tutorial Name | Message  | Category |
|------------|---------------|--|----------|
| 1          |               | OK   |          |
| 2          |               | OK   |          |
| 3          |               | ERROR:Minimization -- Translate function for class "RooGenericPdf" has not yet been implemented.     | 3        |
| 4          |               | ERROR:Minimization -- Translate function for class "RooCFunction3PdfBinding<double,double,double,dou | 3        |
| 5          |               | OK   |          |
| 6          |               | OK   |          |
| 7          |               | OK   |          |
| ...        |               |  |          |

Fig: Snapshot of dataset documenting classes

# Example of Implemented Support :RooRatio

```
125 void RooRatio::translate(RooFit::Detail::CodeSquashContext &ctx) const
126 {
127     std::stringstream code;
128     code << ctx.getResult(_numerator) << "/" << ctx.getResult(_denominator) << std::endl;
129     ctx.addResult(this, code.str());
130 }
131 |
```

Strategy: created stringstream object and takes the ratio after getting the numerator and denominator and adds this to context.

# Benchmarking RooFit BackEnds

1. Tested whether the following benchmarks support Codegen() and CodegenNoGrad() as evaluation backends:

- `benchRooFitBackEnds.cxx`
- `RooFitUnbinnedBenchmarks.cxx`
- `RooFitBinnedBenchMarks`
- `benchCodeSquashAd`

2. Identified classes to add support to and issues to resolve to support all benchmarks.

# Supported Current Benchmarks for Codegen() and CodegenNoGrad()

**benchRooFitBackEnds.cxx**

Gauss\_Fit, AddPdf\_Fit, FitModel

**RooFitUnbinnedBenchmarks.cxx**

No benchmarks supported.

**RooFitBinnedBenchMarks**

All benchmarks supported with warnings.

**benchCodeSquashAd**

All benchmarks supported with EvalBackends.

# Currently in Progress

- Adding codegen support to remaining classes.(translate function)
- Adding Support for Numeric Integrals.
- Updating the benchmarks in rootbench to test all evaluation backends, once the other two points are solved.

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# Questions