Contribution ID: **139**   Type: **Talk (15min + 5min)**

Automatic Differentiation in Julia with Enzyme

Tuesday 25 February 2025 17:15 (20 minutes)

Automatic Differentiation (AD) is an important technique for both scientific computing and machine learning. AD frameworks from the machine learning world often lack the ability to differentiate programming patterns common in scientific computing, such as mutation and parallelism.

In my talk, I will cover the AD framework in Enzyme and how it can be used to differentiate scientific codes in Julia. While my talk will focus on Julia, Enzyme is LLVM-based and can also be used to differentiate C/C++/Fortran.

I will show how one can use Enzyme to differentiate scientific codes in Julia, how to extract Jacobians through directional derivatives and use it to formulate matrix-free methods.

I want to participate in the youngRSE prize

yes

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