Contribution ID: **28** Type: **Short talk**

Aevol: An experimental evolution simulator (and its mini-Apps)

Wednesday 22 March 2023 10:50 (10 minutes)

The Inria Beagle project-team at LIRIS has been developing evolutionary models (Experimental Evolution In Silico) for more than 15 years, and in particular the Aevol software, which makes it possible to identify predictive molecular markers in evolution (emergence of variants, resistance to antibiotics, environmental changes). These markers can be environmental characteristics (living conditions, environmental variations, ...), populational (population size, migrations, ...) or molecular (epistasic interactions, structural variants, ...).

In order to be able to scale these models while increasing their complexity, we apply a co-design approach between modeling approaches and the development of numerical and computational tools and methods related to high-performance computing.

First, we will present the application, its usage and its computational and memory access patterns. Second, we will shortly present previous works on it (in collaboration with Inria Avalon) and the related mini-Apps. Last, as part of the transition to exascale, we will present our roadmap to a rewrite Aevol to take into account a programming model facilitating code variability, performance portability (CPU, Vectorization, GPU) and in-situ data analysis.

JLESC topic

Primary author: ROUZAUD-CORNABAS, Jonathan (Inria / LIRIS)

Presenter: ROUZAUD-CORNABAS, Jonathan (Inria / LIRIS)

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