ARTENOLIS: Automated Reproducibility and Testing Environment for Licensed Software

Laurent Heirendt[1]& Sylvain Arreckx[1], Christophe Trefois[1], Yohan Jarosz[1], Maharshi Vyas[1], Venkata P. Satagopam[1], Reinhard Schneider[1], Ines Thiele[1], and **Ronan M.T. Fleming**[1]*(ronan.mt.fleming@gmail.com)

[1] Luxembourg Centre for Systems Biomedicine, University of Luxembourg, Esch-sur-Alzette, Luxembourg

Project Goals: The aim of this project is to develop a continuous integration framework to automatically test changes to code, evaluate their impact on an open-source code base with licensed dependencies, and ensure the stability, integrity, and cross-platform compatibility of the COBRA Toolbox.

Automatically testing changes to code is an essential feature of continuous integration. For open-source code, without licensed dependencies, a variety of continuous integration services exist. The COnstraint-Based Reconstruction and Analysis (COBRA) Toolbox [1] is a suite of open-source code for computational modelling with dependencies on licensed software. It is distributed as open-source code, but as it is dependent on the licensed software MATLAB (The Mathworks, Inc.). A novel automated framework of continuous integration in a semi-licensed environment is required for the development of the COBRA Toolbox and related tools of the COBRA community. Here, we present ARTENOLIS [2], a freely accessible under http://artenolis.lcsb.uni.lu, a general-purpose infrastructure software application that implements continuous integration for open-source software with licensed dependencies. It uses a master-slave framework, tests code on multiple operating systems, and multiple versions of licensed software dependencies. ARTENOLIS ensures the stability, integrity, and cross-platform compatibility of code in the COBRA Toolbox and related tools.

References

[1] Laurent Heirendt, Sylvain Arreckx, Thomas Pfau, Sebastian N. Mendoza, Anne Richelle, Almut Heinken, Hulda S. Haraldsdottir, Sarah M. Keating, Vanja Vlasov, Jacek Wachowiak, Stefania Magnusdottir, Chiam Yu Ng, German Preciat, Alise Zagare, Siu H.J. Chan, Maike K. Aurich, Catherine M. Clancy, Jennifer Modamio, John T. Sauls, Alberto Noronha, Aarash Bordbar, Benjamin Cousins, Diana C. El Assal, Luis V. Valcarcel, Inigo Apaolaza, Susan Ghaderi, Masoud Ahookhosh, Marouen Ben Guebila, Andrejs Kostromins, Hoai M. Le, Ding Ma, Yuekai Sun, Lin Wang, James T. Yurkovich, Miguel A. P. Oliveira, Phan T. Vuong, Lemmer P. El Assal, Scott Hinton, William A. Bryant, Francisco J. Aragón Artacho, Francisco J. Planes, Egils Stalidzans, Alejandro Maass, Santosh Vempala, Michael Hucka, Michael A. Saunders, Costas D. Maranas, Nathan E. Lewis, Thomas Sauter, Bernhard O. Palsson, Ines Thiele, and Ronan M. T. Fleming. Creation and analysis of biochemical constraint-based models: the COBRA Toolbox v3.0. *Nature Protocols (accepted)*, 2018.

[2] Laurent Heirendt, Sylvain Arreckx, Christophe Trefois, Yohan Yarosz, Maharshi Vyas, Venkata P. Satagopam, Reinhard Schneider, Ines Thiele, and Ronan M. T. Fleming. ARTENOLIS: Automated Reproducibility and Testing Environment for Licensed Software. *arXiv:1712.05236 [cs]*, December 2017. arXiv: 1712.05236.