STENCIL: A web templating engine for visualizing and sharing life science datasets

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Abstract
The ability to aggregate experimental data analysis and results into a concise and interpretable format is a key step in evaluating the success of an experiment. This critical step determines baselines for reproducibility and is a key requirement for data dissemination. However, in practice it can be difficult to consolidate data analyses that encapsulates the broad range of datatypes available in the life sciences. We present STENCIL, a web templating engine designed to organize, visualize, and enable the sharing of interactive data visualizations. STENCIL leverages a flexible web framework for creating templates to render highly customizable visual front ends. This flexibility enables researchers to render small or large sets of experimental outcomes, producing high-quality downloadable and editable figures that retain their original relationship to the source data. REST API based back ends provide programmatic data access and supports easy data sharing. STENCIL is a lightweight tool that can stream data from Galaxy, a popular bioinformatic analysis web platform. STENCIL has been used to support the analysis and dissemination of two large scale genomic projects containing the complete data analysis for over 2,400 distinct datasets. Code and implementation details are available on GitHub: https://github.com/CEGRcode/stencil