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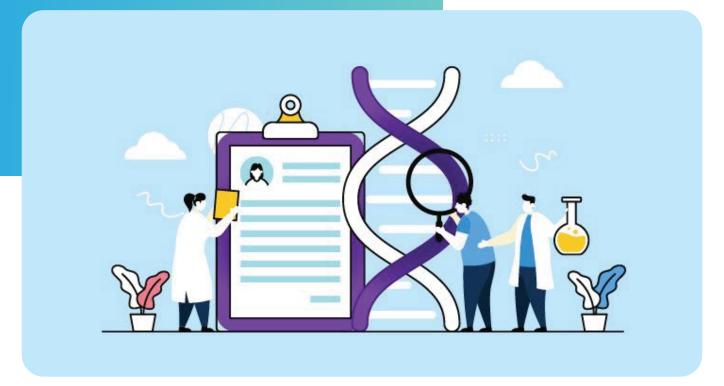
RNA SPLICING ERROR REPORT GENERATION USING ROR FOR A GENETIC ENGINEERING COMPANY

PROJECT OVERVIEW

Report generation implemented within the existing Ruby on Rails application by integrating an R engine, which is triggered internally with dynamic parameters. The Reports are generated as HTML in R and rendered in RoR. Improved application architecture to reduce the complexity and better manage the file processing helped improve the time to generate and load the Reports. Deployment using Dockers on the cloud helped improve the maintainability and availability of the application.

BUSINESS
Product Development

DOMAIN
Life Sciences

KEY HIGHLIGHTS

- Report generation time reduced by 75%

- The complexity of the code optimized for ease of use and efficiency

- Report load time lowered by nearly 30%

ABOUT CLIENT

The Client is a thriving genetic engineering company that drives research and innovation on RNA splicing errors. To extend their existing RNA research and therapeutics focus, the client intended to create a solution for RNA splicing errors leveraging analytics predictions. To detect, catalog and interpret the pattern of RNA, the client had an existing application. However, they were facing performance issues while generating reports for the results of the experiments and was looking at significant wastage of time which they wanted to address.

BUSINESS REQUIREMENTS

To see the results of the experiments, the client came up with the following business prerequisites:

- Integrate R programming with the application, for report generation
- Generate the report for the experiment within a minimum time frame
- Deploy the application in Microsoft Azure cloud platform

SOLUTION OVERVIEW AND IMPLEMENTATION

Indium deployed the following solution to generate report for the RNA sequence experiments:

- Updated the report generation application built on RoR to cater to the new requirements.
- Incorporated an R programing engine for report generation, which would be triggered by the RoR application with dynamic parameters.
- The R engine reads an input .txt file to create an HTML Report which would then be rendered using RoR in the application.
- Leverage Ruby on Rails capabilities to split multiple tabs into individual rails reducing the wait time and facilitating the user to view the results faster.

- A .txt file is dynamically generated and saved in the rails repository while running a report. The same file would be overwritten when the user adds new input that eventually saves disk space.
- The .Rdata file is generated on the first run, so on the next consecutive run, the reports will load faster rather than going through all files.
- Deployment of the rails application using Dockers on the Microsoft Azure cloud.
- As a second phase of the engagement it is planned to enable users to add or alter the code (RMD) by logging into the application and navigating to the specific tab to update in the portal, rather than updating in the codebase.

BUSINESS IMPACT

- The Report generation time was reduced to just 15 seconds by splitting multiple tabs into individual rails.
- The complexity of the Ruby on Rails code in the application was reduced significantly, improving ease of use and efficiency.
- The generation of .Rdata file reduced the loading time of the Reports by nearly 30%.
- Dockerized Cloud deployment improved the availability and maintainability of the application.

TOOLS

ABOUT INDIUM

Indium is a Digital Engineering Services leader and Full Spectrum Integrator that helps customers embrace and navigate the Cloud-native world with Certainty. With deep expertise across Applications, Data & Analytics, AI, DevOps, Security and Digital Assurance we "Make technology work" and accelerate business value, while adding scale and velocity to customer's digital journey on AWS.

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