A Computational Platform for Gene Expression Analysis

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Outline

Domain Problem

Introduction

NOTES:
- Molecular biology is a new subject.
- Many unknowns.
- Gene expression is important...
- Two areas of interest of IBMC experts: differential expression and RBPs.

NOTES:
Motivation:
- Many tools require a very technical set of skills (tools should be facilitators, not hindrances)
- Some tasks need automation.
- Lots of information, often scattered in multiple places.
Objectives:
- Build simples tools that require minimal skill.
- Automate processes.
- Aggregate as much relevant information as possible.

NOTES:
- Two computer systems, one for each domain problem.
- Both accessible through the web.
- Focus on small system footprint, deployable by machine, department, institution.

RNA-Seq Analysis Pipeline

Developed Solution

NOTES:
- Show scheme, refer iRAP, the script and the web interface.
- Refer multiple differential expression tools.
- Refer user input and tool configuration.

RBP Analysis Pipeline (PBS Finder)

Developed Solution

NOTES:
- Show scheme, RBP finding, gene enrichment, clustering.
- Refer web interface. - Refer that the tools is in production for several months, being extensively tested by experts.
- Refer user input and tool configuration.

NOTES:
- Differential expression analysis could benefit from gene enrichment.
- Do we really need two separate platforms?
- Joined together, user choses what analysis to perform.
- Still separate viewing experiences.

NOTES:
- Refer objectives, data and experimental method.
- Refer results.

RBP Analysis Pipeline (PBS Finder)

Case Studies

NOTES:
- Refer objectives, data and experimental method.
- Refer results.
- Maybe show screenshot.

Objective Fulfilment

Conclusions

NOTES:
- All PBS Finder functionality implemented.
- Differential expression analysis pipeline deployed, combination script created.
- It was not possible to integrate with web platform, due to time constraints.

Future Work

Conclusions

NOTES:
- Integrate the entire pipeline.
- Study possibility of large scale deployment.

Review

Bibliography

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