Compression of Differential Expression Data with Deep Autoencoders[1]

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Instructor: Ahmet Sacan
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Data: Digital Expression Explorer 2

Abstract

A one-paragraph summary of the project. Introduce the problem. Describe your model and implementa-tion (mention the programming/modeling environ-ment you used). Summarize your results/findings.

1 Introduction

Problem description, Motivation. Why are we studying this problem? What is the biomedical need? Public health stats, if available.

Biology/Physiology:

- Describe the underlying biology/physiology.
- Find figures illustrating the system (remember to cite the sources).

Goals:

- What do you/authors hope to find/accomplish with this study?
- If successful, how will your findings/result influence our understanding or medical practice?

Related Work:

- Provide a short survey of related work. Put this study in the context of others. Check out the papers cited by your project paper and the papers that cite your project paper to find out what else is being done in this area. Use a citation manager (e.g., Endnote) to automate creation of references, e.g., [1].

2 Dataset

Describe the experiment(s) that produced the datasets you are analyzing in your project. What are the experimental groups? How was the data collected?

3 Methods

Describe your analysis workflow. e.g, normaliza-tion, types of statistical tests, thresholds, etc.

Describe the methods and software you used.

Give implementation details (programming language, operating system, etc.)

If you used code developed by others, provide reference. Describe how you modified/improved/adapted their code.

4 Experiments and Results

Show your main findings.
Prefer figures (e.g., bar charts) over tables to pre-sent your results.
Compare your results to those from publications using these datasets.
This line refers to Figure 1.
If you use tables to report your results, use References-¿Insert Caption-¿Table, OnlyLabel&Number to insert cross-reference to tables. E.g., See Table 1).
This line refers to Figure 2.
Have something intelligible to say about each figure/table you include.

[1] Avoid using identical title to any other publication. Scholarly articles are supposed to be unique identifiers and you do not want your report to appear as a version of the original appear on search engines. If your project is based on a paper, use a title that reflects what you did.

[2] There is a possibility that your project files are made available to future students and/or publicly. If you do not wish to have your full name to appear, please only provide your first name here. If your project files should not be made public, please contact the instructor.

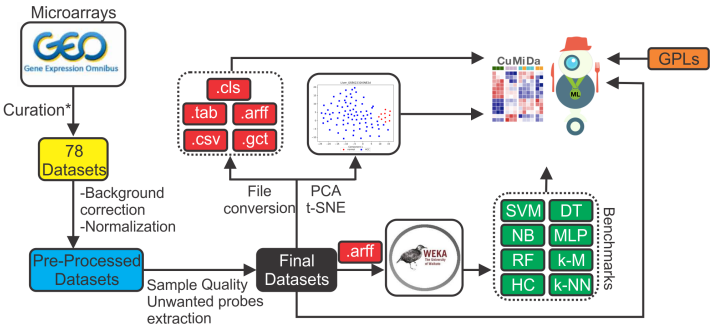

Figure 1: A figure caption.

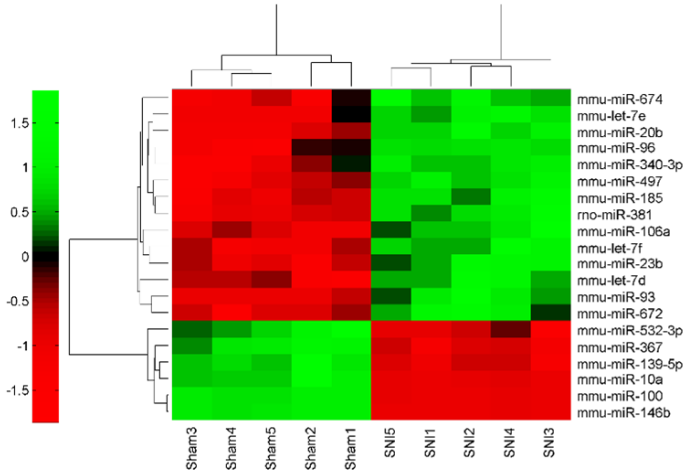

Figure 2: A figure caption.

Name	Fold Change	p-value
hsa-miR-25	-3.9	1.1E-06
hsa-let-7c	-2.5	2.1E-05
hsa-miR-939	-4.6	5.6E-06
hsa-let-7a	-2.5	0.002
hsa-let-7b	-2.4	5.5E-05

Table 1: A table caption.

5 Discussion

Summarize/discuss your results, without repeating verbatim what you already have in the Abstract or Results. Do your results make sense biologically? Find studies that support your findings. (E.g., you found 10 genes in your Alzheimer's dataset analysis, check literature to see if these genes are known for their involvement in Alzheimer's).

What are the limitations of your study?

What follow up studies can be performed to im-prove upon your findings?

References

[1] J. Smith and J. Johnson, "The art of latex," *Journal of TeX*, vol. 10, pp. 1–10, 2010.