

KFSCIS

Fall 2023 Capstone II

App Development for Analyzing Biological Networks

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INTRODUCTION

- Existing Application with existing features such as:
 - Walktrap Algorithm
 - Louvain Algorithm
 - Infomap Algorithm
- For the user interface, modifying and automating the default style of networks was key for enhanced recognition

SYSTEM DESIGN

- Modification of the existing plugin to include:
- Custom VisualStyle creation with tailored attributes for biological networks.
- Implementation of event listeners to apply visual styles dynamically.

VERIFICATION

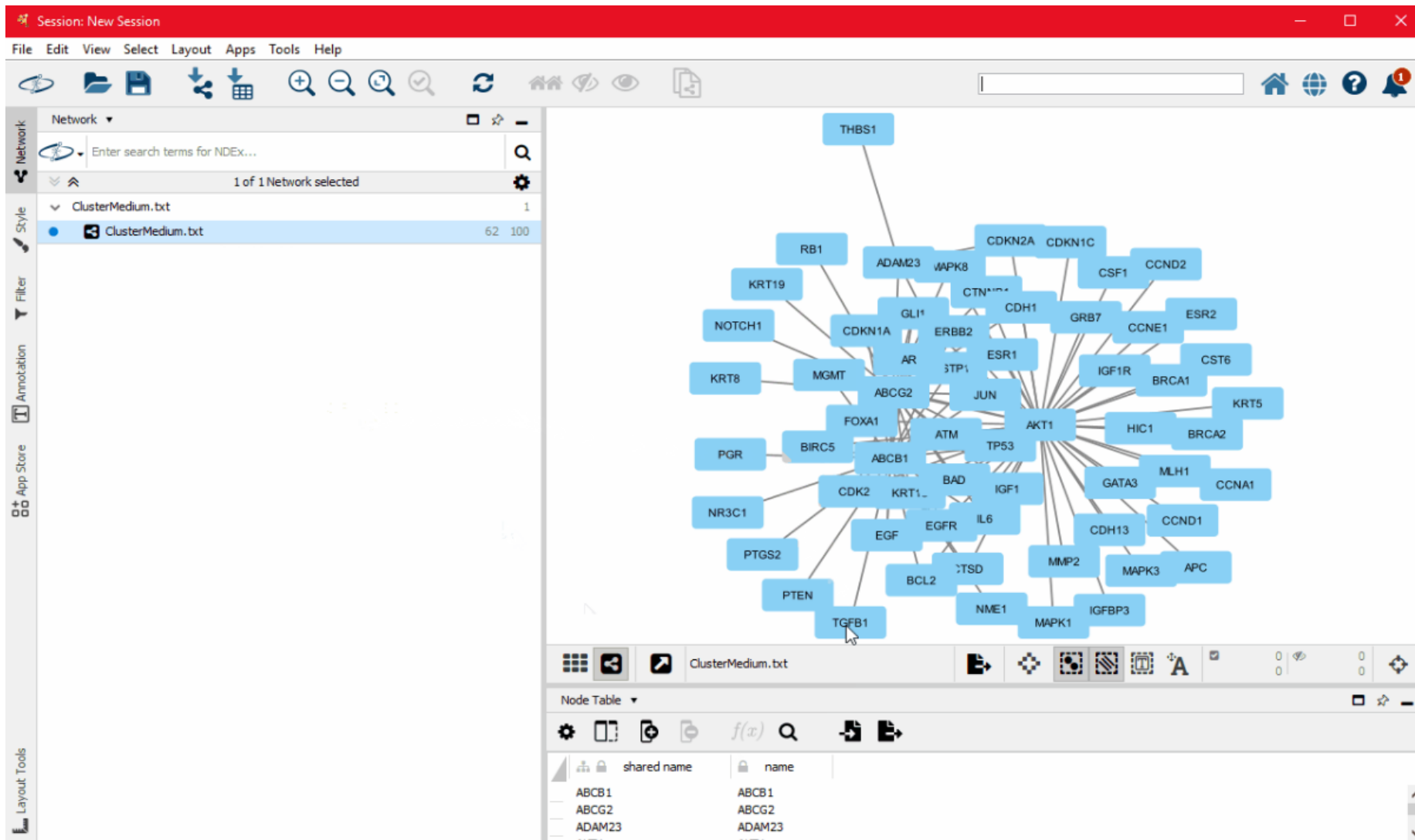
- Testing plugin to ensure:
- Correct application of the visual style to various types of network views
- Proper functionality across different network file formats and data structures

ACKNOWLEDGEMENT

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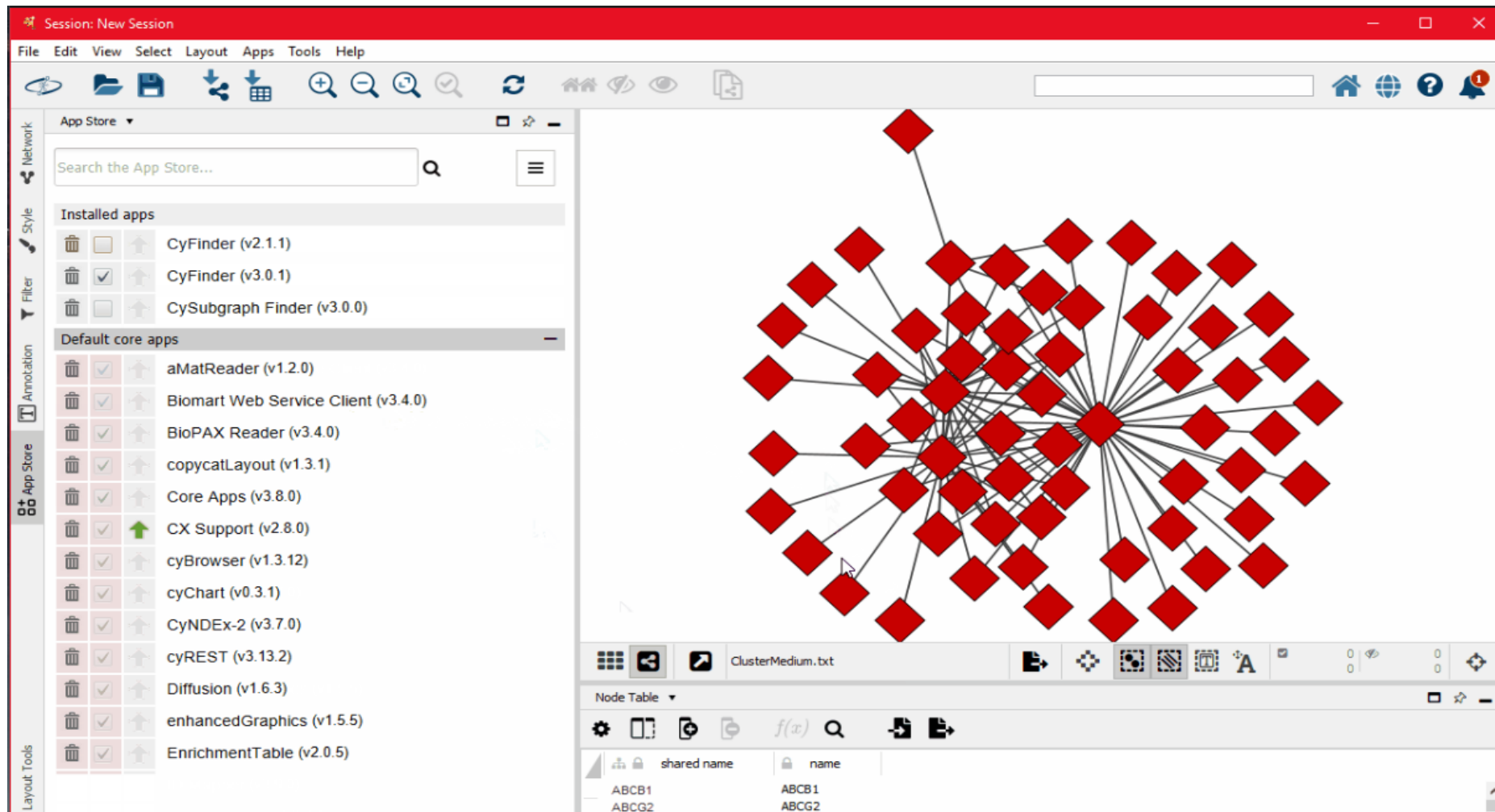
CURRENT SYSTEM

- A Cytoscape plugin capable of generating network views without customized visual styling
- Lacks specific definition of style for biological network representation



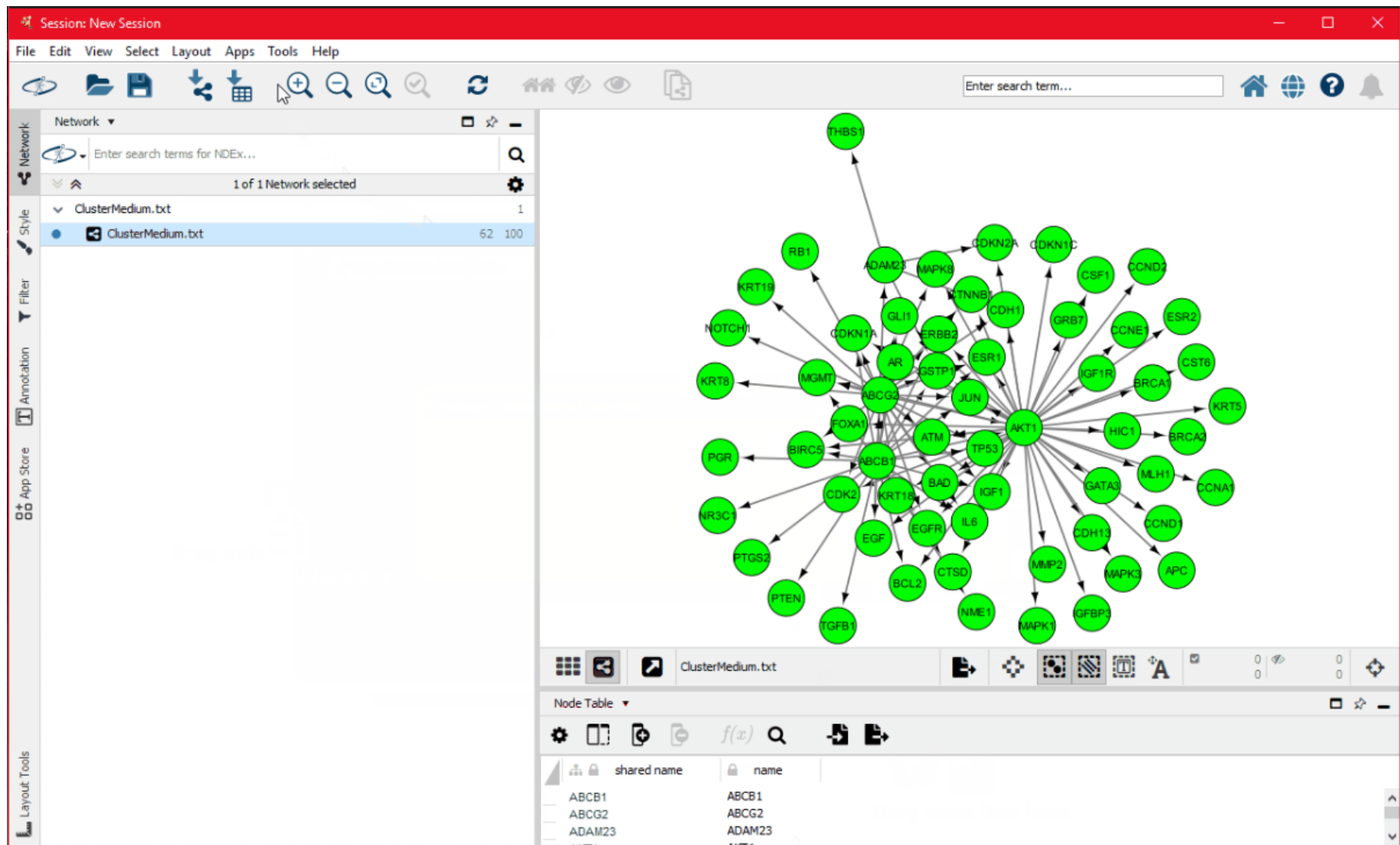
OBJECT DESIGN

- Utilization of VisualStyleFactory and VisualMappingFunctionFactory for style definition.
- NetworkViewAddedListener for applying styles to newly loaded network views.



SUMMARY

- Cyfinder applies a custom biological visual style to Cytoscape networks with directedness
- Improves readability through tailored node and edge representations



REQUIREMENTS

- Customized visualization of biological networks
- Automatic application of visual styles to new network views
- Application of directional edges in the network visualization

IMPLEMENTATION

- Developed a createBioVisualStyle method to define:
 - node shapes,
 - Sizes
 - Colors
 - Labels
 - Edge properties.
- Registered a listener to handle the application of this style to each new network view.

REFERENCES

- Cytoscape.js API Documentation*. (2021). Retrieved from https://cytoscape.org/javadoc/current_release/org/cytoscape/view/vizmap/VisualStyle.html