

Force Direct Visualization for Phylogenetic Trees

● PROGRESS REPORT

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● INTRODUCTION

○ OUTLINE

Chapter 1: Introduction to Phyloviz

Chapter 2: Problem Description

Chapter 3: Technologies

Chapter 4: Arquiteure

Chapter 5: Progress



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PHYLOVIZ

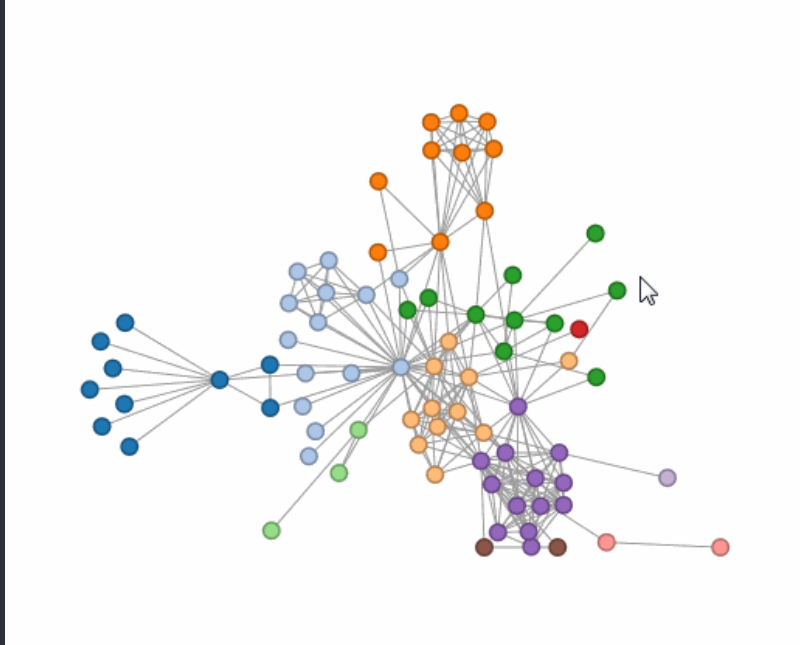
Open-source platform provides analysis of sequence-based typing methods that generate allelic profiles from DNA sequencing

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PROBLEM DESCRIPTION

- Cross-Platform desktop App
- Javascript, HTML & css
- Force Directed Layout

● Other Requirements:



- **Collapse & Expand**
- Pie-chart Graphics
- Labels
- Filters
- **Reports**
- **Statistics**
- Complementary Data
- **Save state**



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TECHNOLOGIES

3.1 Electron JS

3.2 Graph Drawing Libraries



● Electron JS

- Used to build cross-platform desktop apps with JavaScript, HTML and CSS.
- It can be used for both web applications and desktop applications with the same source code.
- Known for its great performance when compared to native applications.

- Graphic Drawing Libraries

- Sigma JS
- Vivagraph JS
- D3

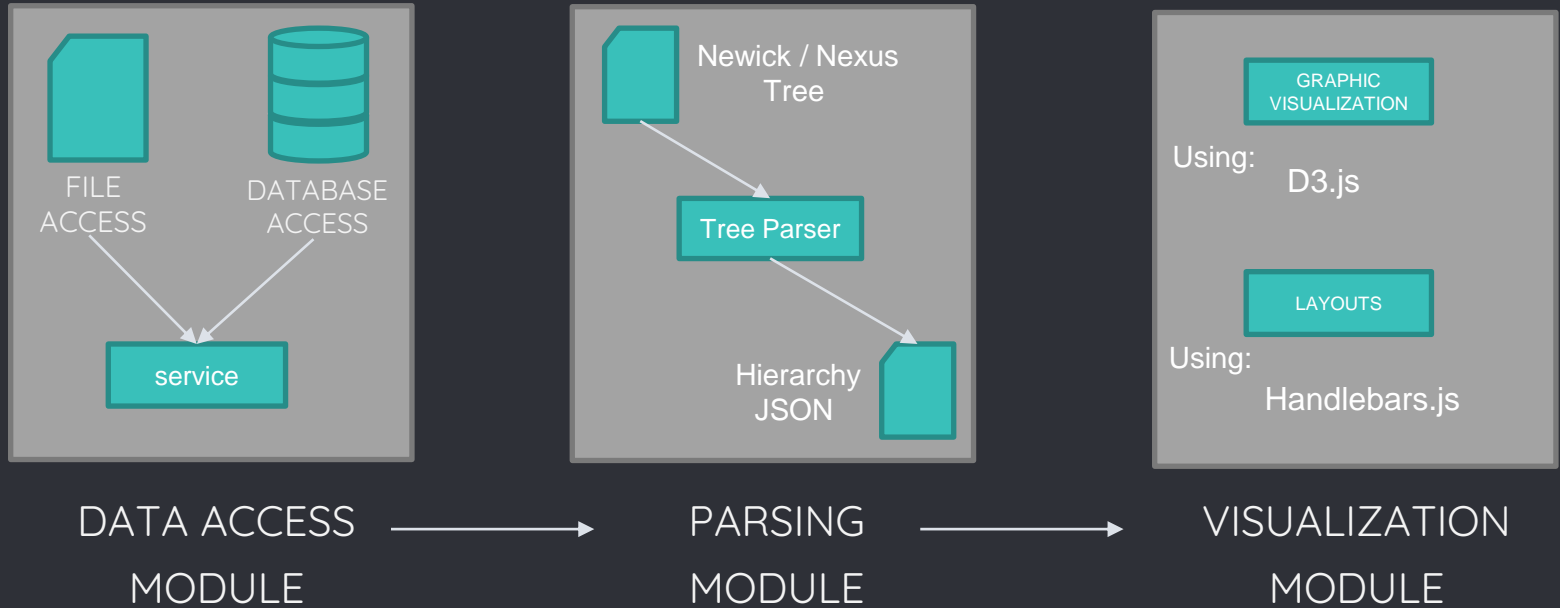
Performance: D3 vs Vivagraph JS

							Small Tree (200 nodes)			Medium Tree (5000 nodes)			Big Tree (16000 nodes)		
		Type of render supported	Allows nodes and links customization	Allows to save coordinates / node position	Updated libraries	Active Community	Simple Graph	Simple Graphh with Labels	Graph with different renderig function	Simple Graph	Simple Graphh with Labels	Graph with different renderig function	Simple Graph	Simple Graphh with Labels	Graph with different renderig function
L I B R A R Y	D3	SVG, Canvas, WebGL	Yes	Yes, allows to save coordinates	Último release em 2021	Yes	42,114	39,485	73,09499	922,624	992,91	813,764	6145,805	6190,83	5948,65
							49,5249	37,725	54,485	1109,75	1139,75	834,264	6297,03	6418,065	6289,819
							47,5549	46,345	42,025	1115,4	1350,785	824,674	5800,959	6762,765	5831,23
							44,509	55,945	52,3949	1091,535	957,655	820,345	5984,93	7577,865	5981,55
							45,8899	46,05	56,635	878,924	959,405	773,499	6309,464	6523,765	5895,764
							45,919	45,11	55,726978	1023,6466	1080,101	813,3092	6107,6376	6694,658	5989,4026
	Viva Graph	SVG, WebGL	Yes	Yes, allows to save node positon	Último release em 2020	Yes	86,8099	152,86	124,875	3067,41	5817,273	1089,474	29518,494	27646,529	6430,465
							83,92	102,249	103,994	3238,979	5443,006	1380,4149	26149,529	27022,234	6990,349
							80,8899	101,73	114,2949	2948,72	4254,264	1216,224	26234,884	31673,945	6262,255
							104,744	110,699	100,785	3140,705	4119,51	1270,08	26053,139	32669,13	6200,584
							121,035	101,985	98,019	3469,559	3390,664	1182,629	26718,135	26532,074	5713,779
							95,47976	113,9046	108,39358	3173,0746	4604,9434	1227,76438	26934,8362	29108,7824	6319,4864

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ARQUITETURE

Data Model



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PROGRESS

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- Performance testing of graphic design platforms (d3, Sigma, VivaGraph)
- Implementing force directed algorithms with expand & collapse and labels
- Data Access module
- Express Server