

ProteinStructure Visualizer: A tool for simple 3D Protein Structure Visualization

BIOEN537

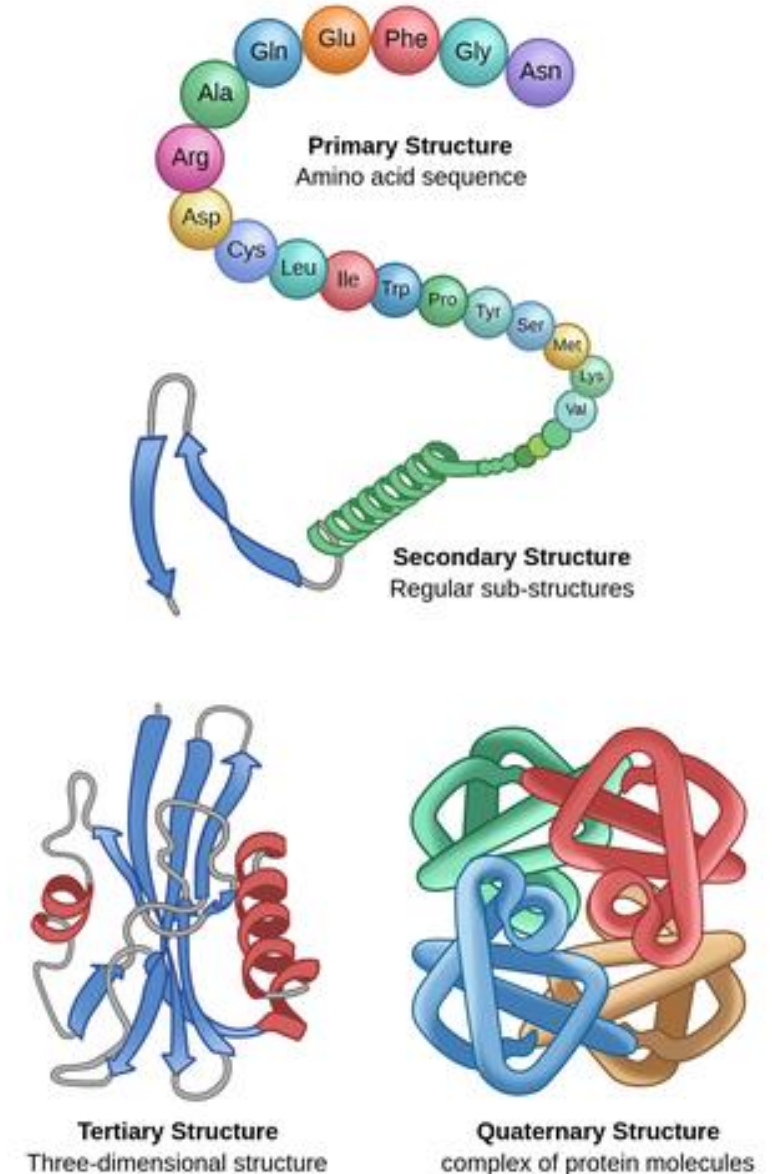
Susan R. Ling

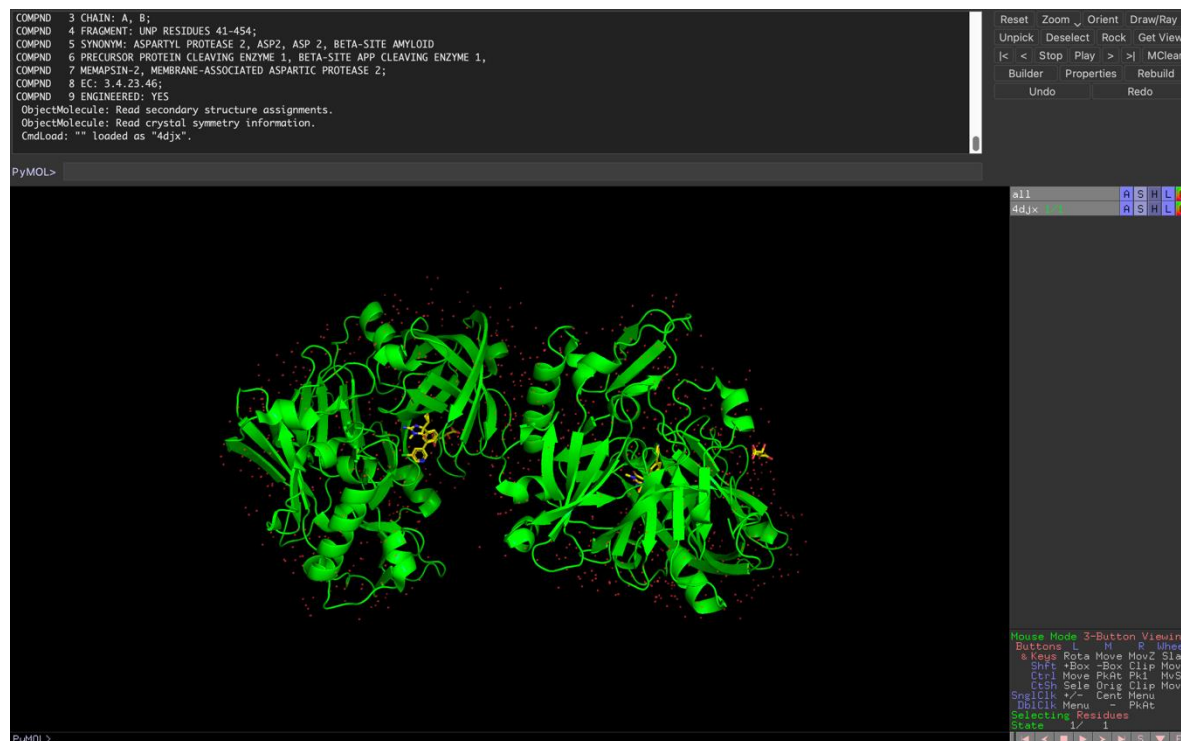
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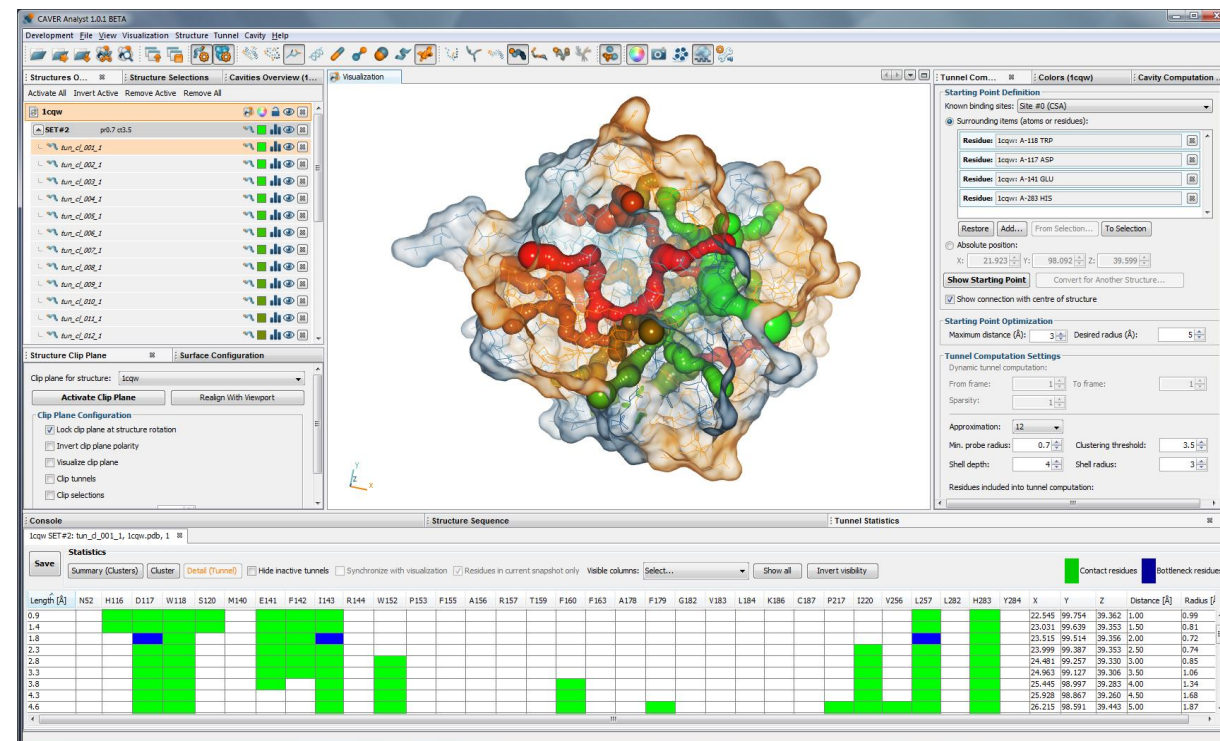
Background

- Sequence information and 2D structures cannot provide adequate information for understanding protein function
- Visualizing protein structures in 3D directly relates to its function → can be used to study protein interactions, drug design and protein engineering





PyMOL

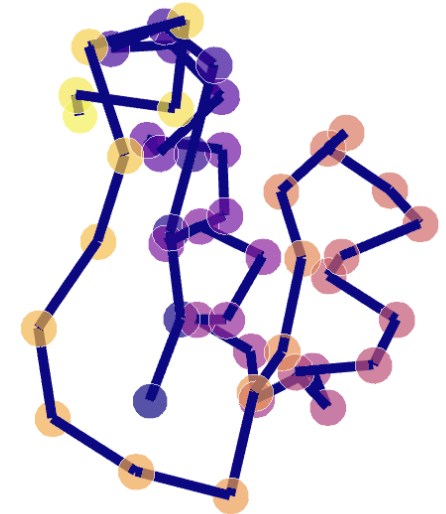
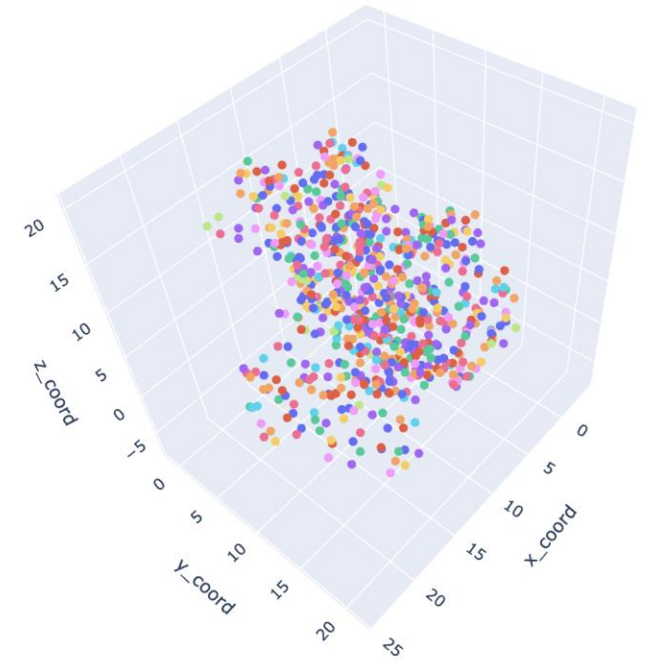


CAVER

Current programs for protein structure visualization are highly specific and complex that require a steep learning curve

Scope

- ProteinStructureVisualizer is a simple GUI designed for 3D visualization of monomeric proteins
- Aims to simplify the complexity of protein structure visualization



Use Cases

User Inputs

- Load in a PDB file



User Outputs

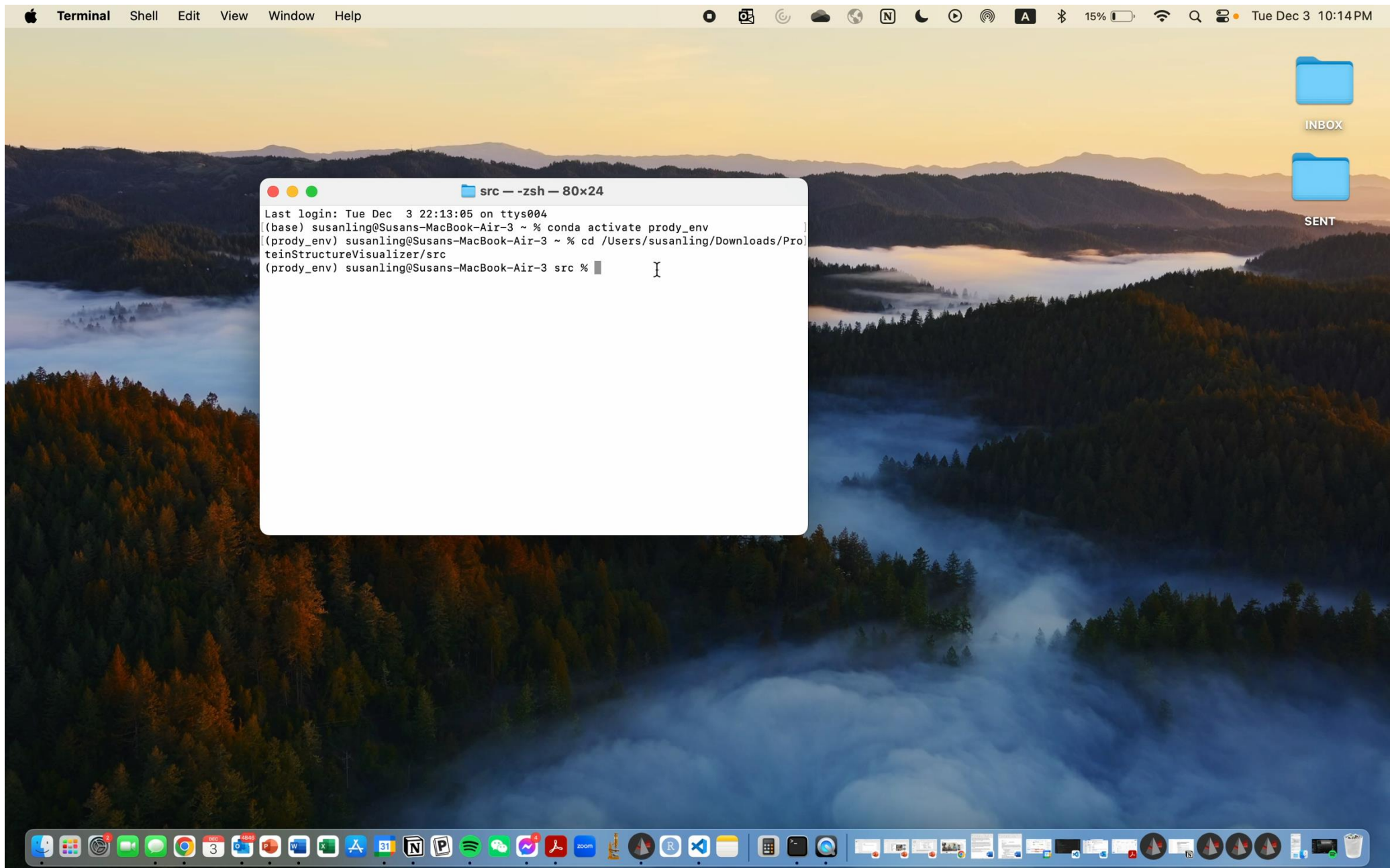
- Parses PDB file into a dataframe
- User would then choose to view:

1) Atom point cloud

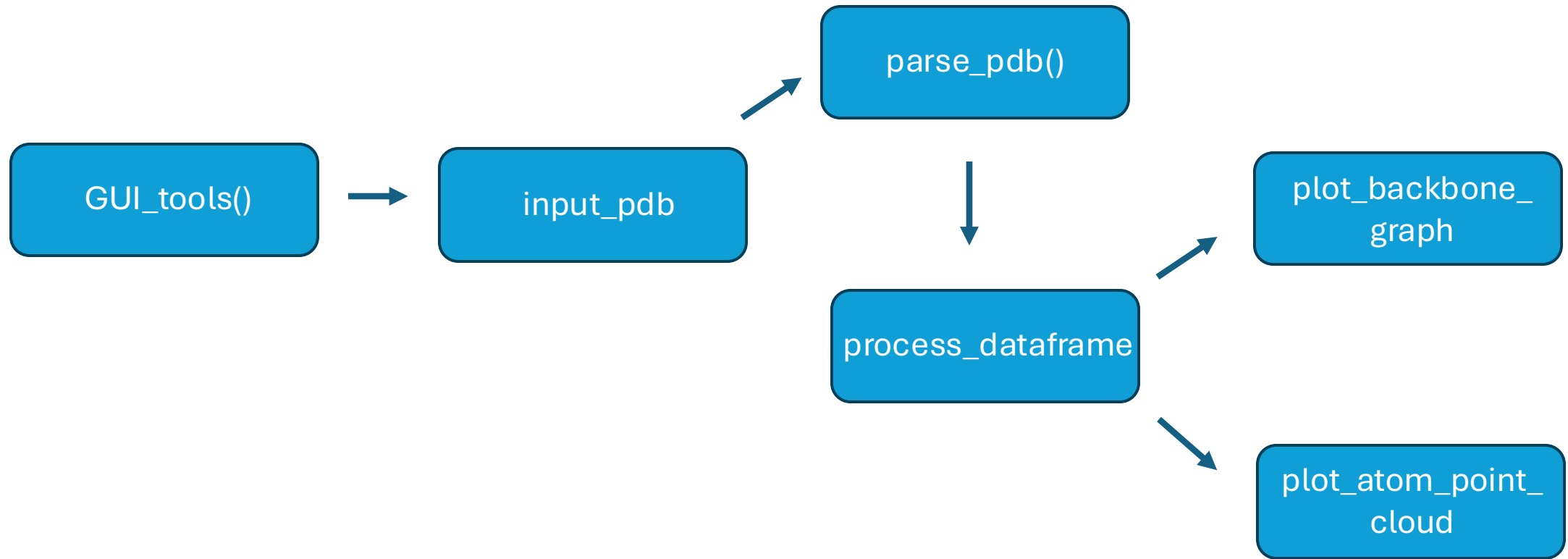
or


2) Backbone structure Graph

Demo



Project Structure





Lessons Learned & Future Directions

- Learnt how to create a GUI
- Learnt how to handle PDB files and processing required
- Addition of functions for processing dimeric and polymeric proteins
- More 3D visualization tools