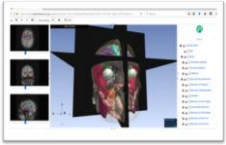


First Training Program and Workshop

MACbioIDi – February – March 2018



Fondo Europeo de Desarrollo Regional



Medical Technology. Open Anatomy Browser.



Introduction

Anatomy Atlases

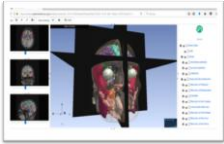
Functionalities

Interface

Technologies

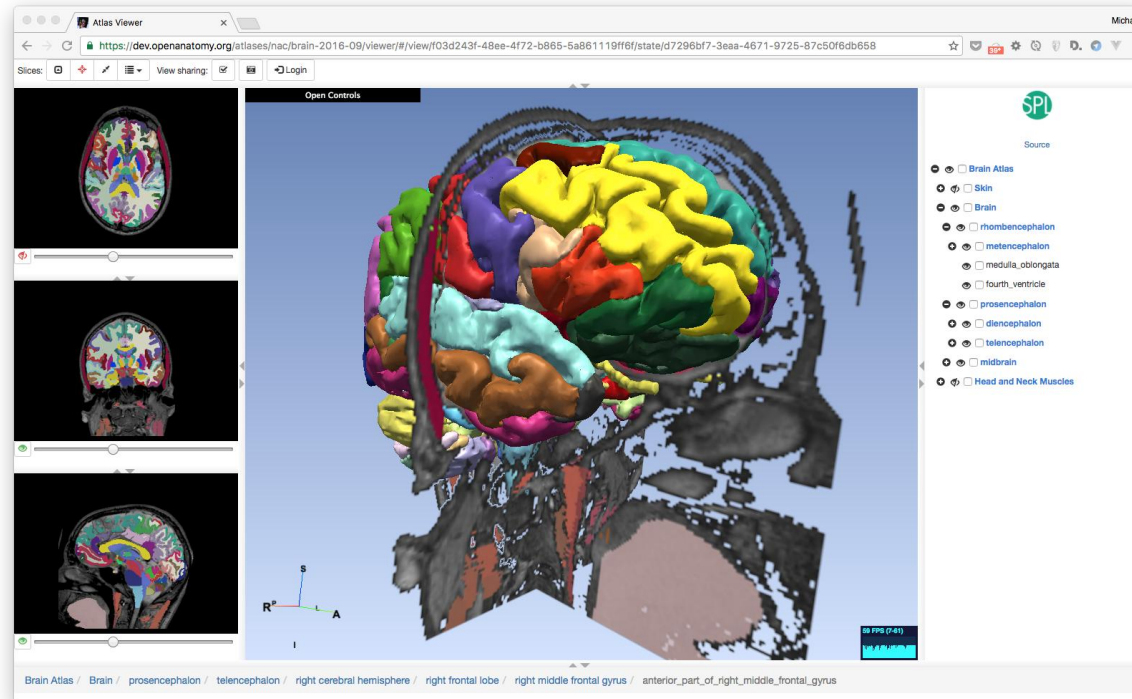
Local installation steps (see file)

References

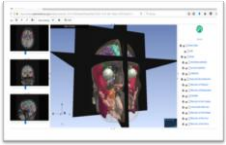


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Introduction

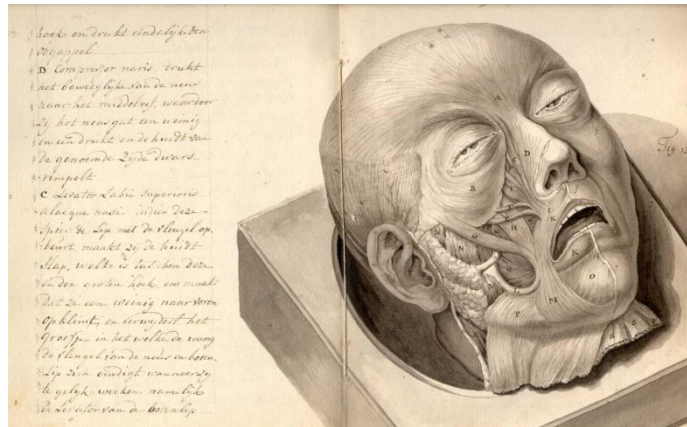


The SPL's Anatomy Browser project brings a rich, highly detailed, hierarchical view of human anatomy to ordinary computers or workstations. [1]

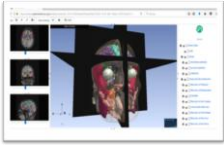


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Anatomy Atlases

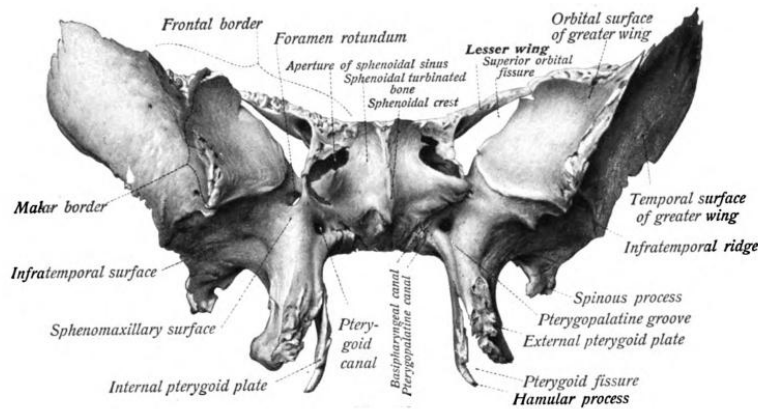


Anonymous. [tise on physiognomy. (Netherlands?, ca. 1790)].

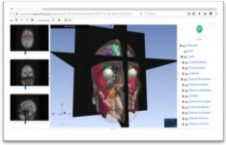


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Anatomy Atlases



An illustration from the 1909 American edition of Sobotta's anatomy with English terminology



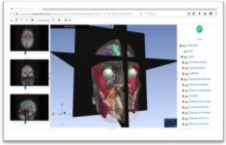
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Functionalities

Single-page web application using current web standards.

Shows and allows the interaction with three-dimensional anatomy atlases with volumetric imaging, geometric models and text metadata.

Supports dynamic shared views between individuals, small teams, or in teacher-classroom settings.

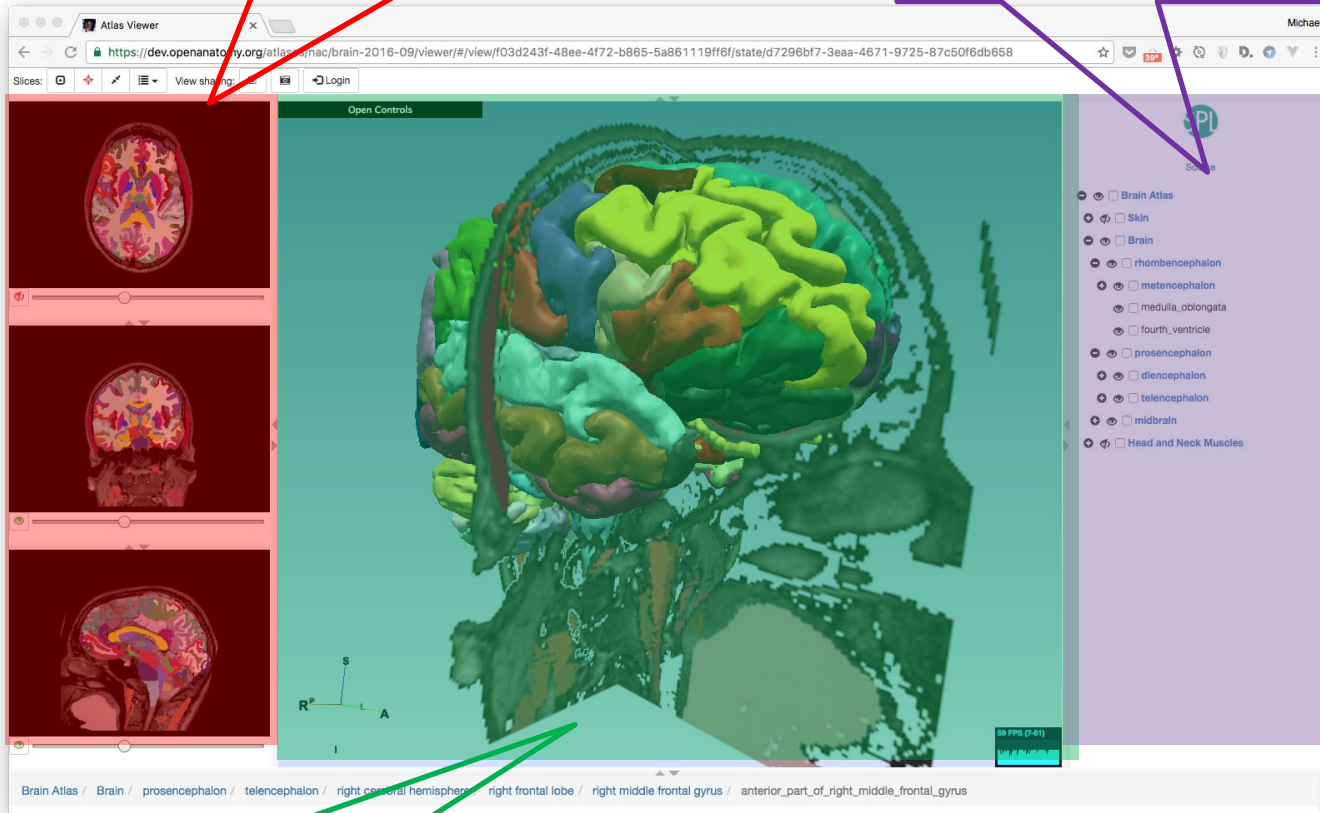


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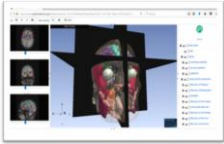
Interface

Cross-sectional slide panel

Text-based structure hierarchy

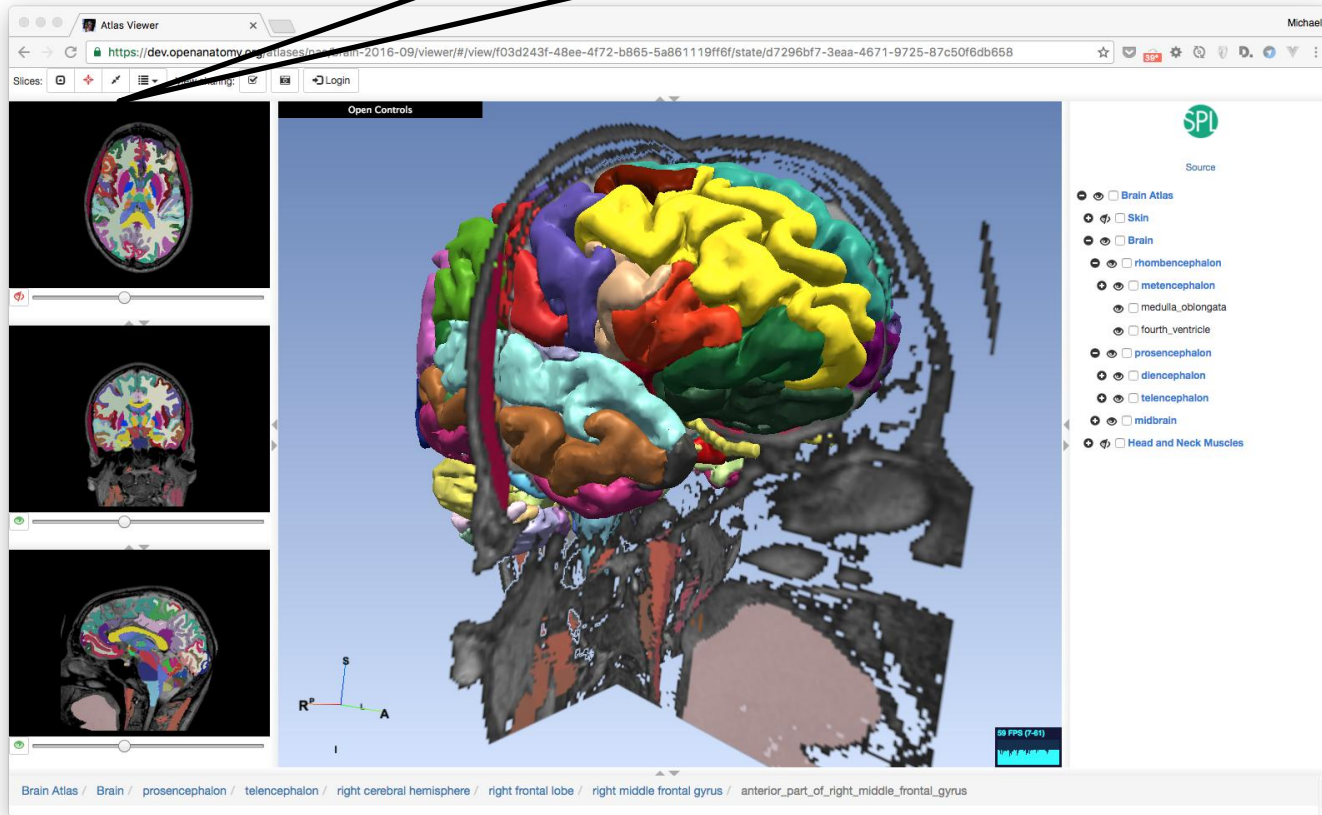


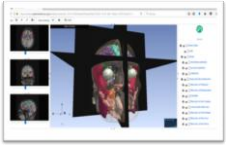
Three-dimensional structure panel



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Interface





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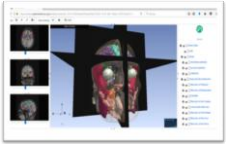
Technology

NodeJS & npm

Node.js is a platform built on Chrome's **JavaScript run-time** for easily building fast, scalable network applications.

Uses an event-driven, non-blocking I/O model

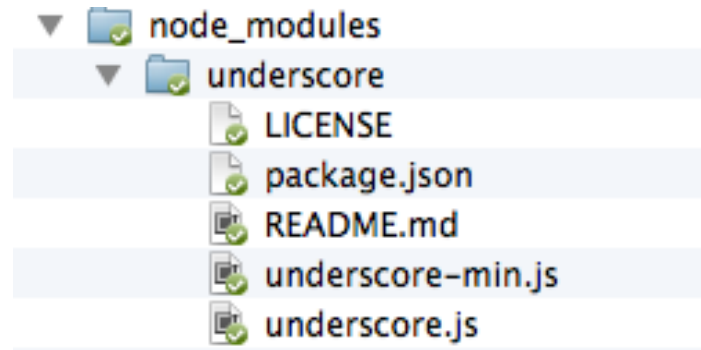
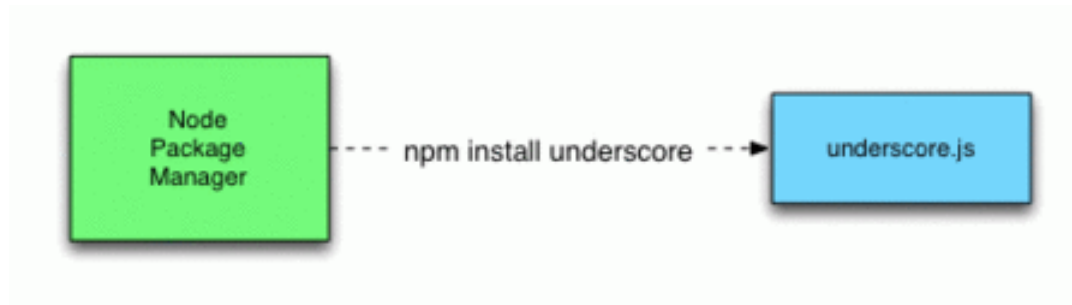
NPM is a package manager for *Node.js* packages, or modules

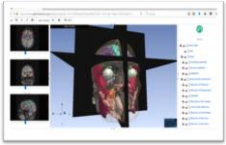


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NodeJS & npm

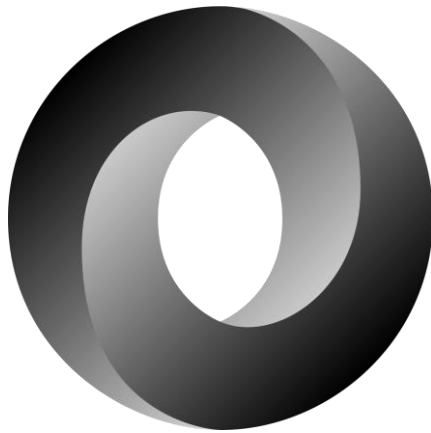




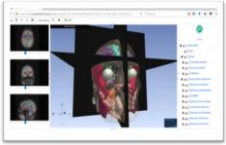
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Json



JSON stands for JavaScript Object Notation, an open-standard file format that uses human-readable text to transmit data objects consisting of attribute–value pairs and array data types.



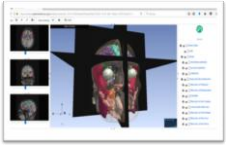
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Technology

Json

```
{ "employees": [
  { "firstName": "John", "lastName": "Doe" },
  { "firstName": "Anna", "lastName": "Smith" },
  { "firstName": "Peter", "lastName": "Jones" }
]}
```

```
<employees>
  <employee>
    <firstName>John</firstName> <lastName>Doe</lastName>
  </employee>
  <employee>
    <firstName>Anna</firstName> <lastName>Smith</lastName>
  </employee>
  <employee>
    <firstName>Peter</firstName> <lastName>Jones</lastName>
  </employee>
</employees>
```



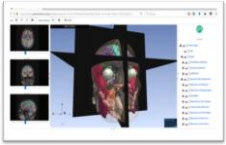
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Technology

Bower



Bower is a manager of elements such as: frameworks, libraries, assets, and utilities. It acts as a dependency manager within the Open Anatomy Browser project.



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Technology

MRML

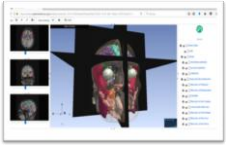
Medical Reality Modelling Language (MRML) is a language as a type of XML document, with new tags defined to handle medical image data types such as volumes, models or coordinate transforms.

MRML Scene is a collection of MRML nodes.

Each data type is represented by a special MRML node.

Source:

https://www.slicer.org/wiki/Documentation/4.4/Developers/MRML#MRML_Scene



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Technology

HTTP servers

A web server, store, process and deliver web pages to clients. Is an application that processes requests using HTTP communicating clients and servers

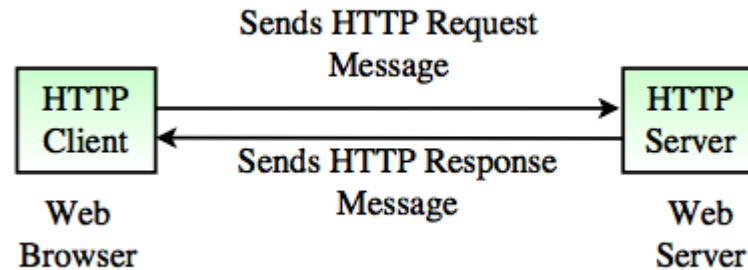
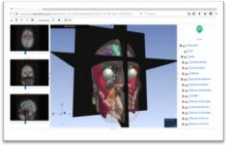


Fig. HTTP Protocol

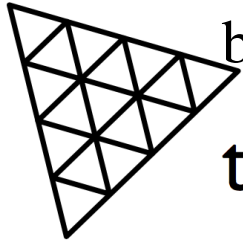


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THREE.js

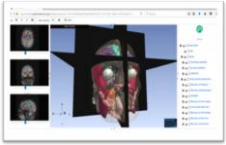
Is a cross-browser JavaScript library/API used to create and display animated 3D computer graphics in a web browser.



three.js



It uses WebGL, a JavaScript API for rendering interactive 2D and 3D graphics within any compatible web browser without the use of plug-ins.

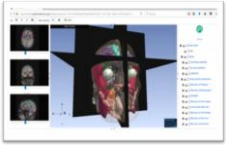


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Technology

Local Installation Steps

1. To install node.js and npm
2. Loading an atlas
3. Preparation of the atlas Json structure, through the *mrmlToJson script*
4. Configuration of the OABrowser.



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References

- [1] <https://www.ncbi.nlm.nih.gov/pubmed/28396633>

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