

The Proteomics Image Annotator (PIAnno) Web Application

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Abstract

The Nutrigenomics group is made of Proteomics researchers, around 60 in number, who are distributed throughout New Zealand. The scientists conduct their research using '2d gel electrophoresis' images. The resulting image contains spots of interest. Information about these spots (like the corresponding gene etc.) are then annotated onto the image. The process of annotating and sharing the image is far too complicated as researchers resort to using tools such as PowerPoint to annotate and then share these annotated images via email. The Proteomics Image Annotator (PIAnno) web application gives the Proteomics researchers the ability to import and annotate 2d gel electrophoresis images, save them to a database, and then export them in an image format. This allows sharing of information between these scientists utilising an easy to use web interface.

Keywords

Nutrigenomics, Crohn's disease, QCubed Framework, HTML 5 Canvas

Introduction

Scientists within the Nutrigenomics group are currently undertaking an investigation of food gene interactions. They are looking into Crohn's disease and trying to find nutritional ways to combat it.

Scientists from around the country are partaking in this research project and thus a lot of the data collected, specifically the 2d gel electrophoresis images, is required to be shared between them. Plant and Food have created a



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basic image annotator prototype that allows the 2d gel images to be stored centrally. It uses a geographic information system that provides an easy to use annotation tool. The existing system does not allow for exporting of these annotated images to image formats, currently an entire screen capture is the only way to record the annotated image. The objectives of the Proteomics Image Annotator (PIAnno) web application project were to improve the existing system so the scientists have the ability to export the annotated 2d gel images in an image format. All of this was to be done via an easy to use web interface to provide a simple sharing solution for the scientists involved.

Methodology Analysis

Analysis of the old system was completed by reviewing the different areas such as the database, QCubed framework and OpenLayers software.

Research

Research was undertaken to investigate how different image layers could be exported. Particular methods that were investigated were: HTML 5 Canvas layers and VML code for non-compliant browsers.

Development

A custom image layer was created to handle the exporting of the gel image into a canvas layer or VML state. Code was written to get the canvas and VML code converted into the chosen file types before displaying a link to the end user for download.

Conclusion

The scientists now have the ability to annotate and export 2d gel electrophoresis images to a desktop computer via a web

interface. This gives the researchers the enhanced capability to share data with each other, without resorting back to PowerPoint and email as the previous system necessitated.

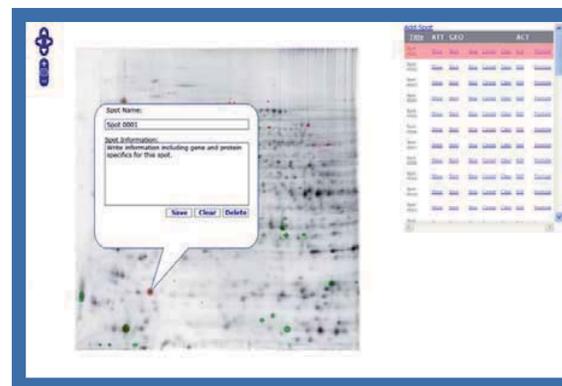


Figure 1: Annotating spots of interest



Figure 2: Set image properties

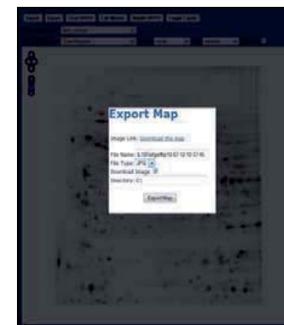


Figure 3: Export Success!