Survey of Bioinformatics Mobile Applications

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Purpose

Get an idea of what Bioinformatics applications are currently available

Evaluate based on functionality and quality

Look for development opportunities

We will take a look at some currently available applications and discuss some options

Evolutionary Biology[1]

This App was created as a project to teach evolutionary biology concepts by a group of students enrolled in Bioinformatics at Brigham Young University.

Evolutionary Biology

- Very simple implementation
- Looks like a simple UIView
- Probably just basically a website
- Has some simple games for examples (nice educational tool)
- Not much of an application, as such, more of a simple presentation

Phylogram[2]

Phylogram allows visualization of the phylogenetic trees resulting from bioinformatics sequence analyses. Bootstrap support values (if provided) and leaf names are displayed on each phylogram. This app provides two example tree files (in Newick[3] format). It also allows you to sync your own tree files using iTunes, and then view them wherever you are.

Phylogram

- ## Not intuitive
  - Ex: Tab to implement tree draw

- ## Does not handle landscape
  - Can't get to file selection

- ## Odd choices for elements
  - Scrolling text view for copyright

Biocatalogue[4]

This app allows you to browse the catalogue for services, service providers, other BioCatalogue members. In addition to this, you can sign into the BioCatalogue registry through the app to view:

- Your favourite web services;
- The web services you have submitted;
- The web services for which you are responsible.

Biocatalogue

View information about web services including monitoring details, REST[5] endpoints, and SOAP[6] Operations.

Biocatalogue

- Simple informational app about available web services.
- Gives basic description and some info about web interface (REST or SOAP)
- Reasonably nice front end
- Handles landscape and portrait
  - Wasted space in landscape
- Service list is just a list with no real organization
- Information is minimal on a per-call basis

EdgeBio[7]

EdgeBio is an established research reagents and sequencing/bioinformatics provider company to the scientific research community. Our products and services help simplify the complex task of discovery, and make it affordable and fun. In a high-pressure field with so many unknowns, EdgeBio offers our customers both peace of mind and a competitive edge.

EdgeBio

The EdgeBio app unifies all digital resources of EdgeBio to deliver a truly enhanced, interactive experience. We bring together all content from the EdgeBio blog (Views from the Edge), our website and online communities in one integrated, easy-to-navigate app. The app is free to download.

EdgeBio

The EdgeBio app allows you to:

- Discover new articles from "Views from the Edge"
- See what people at EdgeBio are reading & sharing in "What We're Reading" section
- Watch videos from EdgeBio on Genomics, Bioinformatics and Biotech topics
- Interact via Email, Facebook and Twitter
- Get directions to EdgeBio through an interactive map and guidance system

EdgeBio

- Nice looking

- Good user experience

- Tie-in to existing web/social information

- More a link to videos, blogs, articles, etc. than bioinformatics tools

SimAlign[8]/SimGene[9]

SimAlign is an iPhone/iPod touch application designed for molecular biologists, bioinformaticians and medical researchers. The application interfaces with NCBI[10] BLAST[11] service to align a provided sequence or Accession to a variety of genomic, RNA and protein databases. The application saves all queries and allows users to easily recall and resubmit past searches.

SimAlign/SimGene

- Only for iPhone, not iPad
- Easy to use
- Ties to NCBI web API
- Requires significant previous knowledge of API
- SimGene crashes periodically

Conclusions

- Very few mobile applications currently available
- Those that exist are "light" on content
- Most could use improvement from an implementation standpoint
- At first glance it appears that the best approach is to develop applications that use web (or cloud) APIs due to the computational demands of individual tasks

Good News!

- Lots of opportunities for development of new applications
- Interface and functionality problems with current options present an opportunity for developers to create better designed applications
- Could be a result of the need for understanding of both Biology and Computer Science

References

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