Chathura Gunasekara

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Education

2013 May - 2017 Spring (expected)

PhD, Computational Science & Engineering; Michigan Technological University (Houghton, MI)

PhD Thesis title: Bioinformatics Tools and Algorithms for Gene Regulatory Network Inference

2006-2010

BS, Computational Physics; University of Colombo (Sri Lanka)

Major in Physics with minor in Computer Science and Applied Mathematics

Projects, Work Experience & Publications

Graduate Research Assistant : 2013 - Present

*Currently I am Working under **Dr. Hairong Wei**, conducting research to infer gene regulatory networks and indentify regulatory transcription factors (TFs) which control known biological pathways in* Arabidopsis thaliana *under stress conditions using gene expression data.*

- **TF-miner**
- My early **attempts** for this research was **presented** at NSF Project/Bioinformatics Workshop @ Noble Foundation, Ardmore, Oklahoma.
- Pairwise analysis of Pathway - Transcription Factor gene expression data to find regulatory TF clusters.**Git**
- Currently implementing a **web** based gene expression data analysis pipeline to identify Transcription Factor(TF) clusters which associates with known biological pathways using novel pair-wise gene association methods such as Maximum Information Coefficient(MIC), Distance Correlation.

Past projects

- **Developed**, **implemented** and **published** an algorithm and web application to search for degenerate motifs in the promoter regions of 50 plant species genomes. Our suffix tree based search algorithm can search for 100 degerate motifs in 35000 genes under 4 minutes!.
- I configured, installed and developed Perl scripts for parsing the FASTQ files using open sourse tools for a genome browser to **visualize** RNA-seq and Ribo-seq of wild-type and STTM mutants. This browser provides information on global translation status and miRNA-directed translation inhibition, which is currently lacking in plants. This web portal make them available to the research community.
- **Co-authored** an algorithm to infer hierachical gene regulatory network from gene expression data.
- **Implemented** and **Co-authored** Poplar Gene Expression Pipeline web application.
- **Contributor**, to Birch Genome publication building a Circos Visualization

Software Engineer/Research Engineer : 2010 - 2013

Worked on a **collaborative research project** with University of Colombo School of Computing and Sri Lanka Navy. Following are the list of publications I authored/contributed:

- Develop algorithms and to implement using Java and web based technologies a Survailance platfrom to fuse data from multiple transponders such as AIS, RADAR sensors around Sri Lanken coast line.**First-Author**
- Maritime Navigation Simulator Project, **First-Author CGAT 2012, Thailand**, Low Cost 3D Immersive Telepresence for Survaillance, Planning, Maneuring : 3D-COP 10.5176/2251-1679_CGAT31. Computer Games, Multimedia & Allied Technology Conference 2012.
- Maritime Navigation Simulator Project, **Co-Author ICter 2012** for Simulating Narrow Channel Effect on Surge Motion of a Ship in a Virtual Environment
- Undergraduate Research **Conference paper**, Spatialized Real Time Auditory Interface for a Virtual Maritime Application in 2010.

Technical Experience and Course work

Predictive Modelling Data Science Fall 2014

Optical Character recognision

Fall 2014 Data Mining Spring 2015 Group Project

Keosera Document solutions Big Data Project

For items which don't have a clear time ordering, a definition list can be used to have named items.

- These items can also contain lists, but you need to mind the indentation levels in the markdown source.
- Second item.

Data Mining for Geospatial Applications Fall 2013

List open source contributions here, perhaps placing emphasis on the project names, for example the **Linux Kernel**, where you implemented multithreading over a long weekend, or **node.js** (with **link**) which was actually totally your idea…

Programming Languages

first-lang: Here, we have an itemization, where we only want to add descriptions to the first few items, but still want to mention some others together at the end. A format that works well here is a description list where the first few items have their first word emphasized, and the last item contains the final few emphasized terms. Notice the reasonably nice page break in the pdf version, which wouldn't happen if we generated the pdf via html.

second-lang: Description of your experience with second-lang, perhaps again including a **link**, this time placing the url reference elsewhere in the document to reduce clutter (see source file).

obscure-but-impressive-lang: We both know this one's pushing it.

Basic knowledge of **C**, **x86 assembly**, **forth**, **Common Lisp**

Extra Section, Call it Whatever You Want

- Human Languages:

  - English (native speaker)
  - ???
  - This is what a nested list looks like.
- Random tidbit
- Other sort of impressive-sounding thing you did
