Chathura Gunasekara

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Education

2017 Spring (expected) **PhD, Computational Science & Engineering**; Michigan Technological University (Houghton, MI)

Advisor: **Dr. Hairong Wei**

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

2010 **BS, Computational Physics**; University of Colombo (Sri Lanka)

Major in Computer Science with minor in Physics and Applied Mathematics*

Professional Experience & Publications

Graduate Research Assistant : 2013 - Present

Curruent Projects

- TF-miner is a data analysis pipeline based on partial least squares and graphical gaussian models to identify regulatory TFs using microarray expression under stress conditions. **[source]**
- Infer gene regulatory network from DREAM5 dataset and extend the method for arabidopsis gene expr data at a Bioinformatics Workshop at Noble Foundation, Ardmore, Oklahoma.**[source]**
- Pairwise analysis of gene expression data to find regulatory TF clusters using novel association methods.**[source]**
- Currently implementing a web based gene expression data analysis pipeline to identify Transcription Factor(TF) clusters which associates with known biological pathways.**[source]**, **[web]**

Completed projects

- Developed an algorithm and web application to search for degenerate motifs in the promoter regions of 50 plant species genomes.**[source]**, **[web]**, **[publication]**
- Configured, installed a JBrowse genome browser to visualize RNA-seq and Ribo-seq of wild-type and STTM mutants to parse fastq files.**[web]**
- Collaborated with a lab member to publish an algorithm to infer hierachical gene regulatory network from gene expression data.**[publication]**
- Collaborated with a lab member to develop the Poplar Gene Expression Pipeline web application. **[web]**, **[publication]**
- Contributed to the publication of a lab member by creating a Circos Visualization of genomics data from Birch genome.**[source]**

Software Engineer/Research Engineer : 2010 - 2013

I Worked on a **research project** with University of Colombo School of Computing and Sri Lanka Navy.

- 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.**[Publication]**
- Maritime Navigation Simulator Project, Low Cost 3D Immersive Telepresence for Survaillance, Planning, Maneuring : 3D-COP 10.5176/2251-1679_CGAT31. Computer Games, Multimedia & Allied Technology Conference 2012.**[Publication]**
- Maritime Navigation Simulator Project for Simulating Narrow Channel Effect on Surge Motion of a Ship in a Virtual Environment. **[Publication]**
- Undergraduate Research on Spatialized Real Time Auditory Interface for a Virtual Maritime Application in 2010.**[Publication]**

Technical Experience and Recent Course work

Technical Skills	Software engineering (Object oriented programming, version control, Documentation)
	Python (scikit-learn/numpy/scipy/pandas), R, Microsoft Excel
	Perl, Java, C++, Database(SQL), Linux/Unix/Shell Scripting
	Web Development (Linux/Apache/MySql/PHP) and web server management
Data Science	Applied Predictive Modelling (Fall 2014), Introduction to Data Science (Fall 2014)
	Data Mining (Spring 2014), Data mining for geo spatial applications (Fall 2015)
	Machine Learning Foundations: A Case Study Approach by University of Washington on Coursera **[verify]**
	Machine Learning: Regression by University of Washington on Coursera **[verify]**
Statistics	Statistical Methods (Fall 2013), Regression Analysis (Spring 2013)
	Time series analysis and forcasting (Spring 2015)
Computer Science	Advanced Scripting and Programming (Fall 2015)
	Algorithmic Toolbox by University of California, San Diego & Higher School of Economics on Coursera.**[verify]**
Biology	Bioinformatics Programming Skills (Fall 2013)
	Following Genomic Data Science Specialization Johns Hopkins University on Coursera

Professional Development

2016	Presentation at NSFproject/Bioinformatics workshop at Noble Foundation, Ardmore, OK on Gene regulatory network prediction using partial least squares and bayesian network methods.**[*presentation*]**
2016	Poster presentation at research symposium of Life Science and Technology Institure, Michigan Tech

2014 Presentation at Graduate research symposium organized by Graduate Student Governement, Michigan Tech