

Chathura Gunasekara

2101 Woodmar Dr
Apt C Houghton, MI, USA

cjgunase@mtu.edu
906-231-3808

Education

- 2013 May - 2017 Spring (expected)** **PhD, Computational Science & Engineering;** Michigan Technological University (Houghton, MI)
PhD Thesis title: Bioinformatics Tools and Algorithms Development for Gene Regulatory Network Inference
- 2006-2010** **BS, Computational Physics;** University of Colombo (Sri Lanka)
Major in Computer Science with minor in Physics and Applied Mathematics

Projects, Work Experience & Publications

Graduate Research Assistant : 2013 - Present

*Currently Working under **Dr. Hairong Wei** at Michigan Tech. University, 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 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. [\[source\]](#), [\[presentation\]](#)
- 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

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 Surveillance platform to fuse data from multiple transponders such as AIS, RADAR sensors around Sri Lankan coast line.**[Publication]**
- Maritime Navigation Simulator Project, Low Cost 3D Immersive Telepresence for Surveillance, Planning, Maneuvering : 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 forecasting 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**

Bioinformatics Bioinformatics Programming Skills Fall 2013

Additional Skills

Teamwork Ability and willingness to work effectively in a team setting

Skills Able to motivate team members to greater success

**Communi-
cation Skills**

Speaks persuasively and articulately

Listens carefully and welcome advise and criticism

**Extra Activ-
ities**

Mentoring masters students who worked in our lab

Recently started a data science/programming **blog** to share what I learn with the world!