# JOSEPH J. NALLURI **Computational biologist | Clinical informatician**


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**Research Interests** Data learning from clinical/heath data sets, algorithmic and analytical methods in systems/network biology, clinical/bio-informatics

**Education**

**Virginia Commonwealth University (VCU)**, Richmond, Virginia, USA

Ph.D., Computer Science, Aug. 2017

- Dissertation Title: *Network analytics for miRNA regulome and miRNA-disease interactions*
- Advisor: Preetam Ghosh, Ph.D

**Texas A &M University- Corpus Christi (TAMUCC)**, Corpus Christi, Texas, USA

M.S., Computer Science, Aug. 2012

- Thesis Title: *Parallel computing for hyperspectral imaging in multiprocessor architecture*
- Advisors: Ahmed M. Mahdy, Ph.D and Mehrube Mehrubeoglu, Ph.D.

**University of Pune**, Pune, India

B.S., Computer Science, August 2009

**Software Proficiency**

Programming: R, Matlab, C/C++, Python, GLPK, bash, OpenMP/MPI *(Parallel computing)*
Web technologies: Angular, Javascript, Node.js, Jquery, d3.js *(data visualization)*, cURL, Apache
Databases and OS: MySQL, Oracle, MongoDB and Linux/cluster framework, Windows
Bioinformatics packages/tools: TCGA, NCBI, Bioconductor, DAVID, ToppGene

**Research/Work Experience**

**Postdoctoral Research Fellow** Oct. 2017 - current
Radiation Oncology, VCU Health, Richmond, Virginia
Veterans Hospital Administration (VHA), U.S. Department of Veterans Affairs

- Develop a clinical data analytics repository for quality, practice and outcome practice assessment and decision-support for radiation therapy (RT) treatment care in VA hospitals under the VHA's National Radiation Oncology Program.
- Data modeling, engineering and aggregation of data from disparate medical, clinical and biological data sets for analytics platform

**Graduate Research Assistant** Aug. 2012 - Oct. 2017
Department of Computer Science, VCU
Supervisor: Preetam Ghosh, Ph.D

- Develop computational analytics and machine learning models for identification of novel disease target measures in NGS, microarray expression data sets
- Data learning from biological data sets via networks scientific and graph theoretic analytics
- Develop computational pipelines, web services, databases and data visualizations for integration of heterogeneous datasets (publicly available and patient/clinical data) for research analysis
- Modeling and inference of biological networks involving miRNAs, genes and diseases

**Software Intern (full-time)** Jun. 2015 - Aug. 2015
ZMT Zürich MedTech AG, Zürich, Switzerland
Supervisors: Manuel Guidon and Stefan Schilds

- Implemented a web based user interface around an existing server application used in the simulation platform Sim4Life to process and manage large simulations and their results
- The web user interface facilitated the administration of all control job queues; implemented using C++ web toolkit called 'Wt'

**SQL Report Writer** Sept. 2010 - Jan. 2012
Bursar Office, TAMUCC
Corpus Christi, Texas

- Design and writing PL/SQL scripts for recordkeeping in Oracle database
- Perform generation and automation of reports

## Projects

1)*HINGE: Health Information Gateway and Exchange for radiation oncology*
An integrated clinical data curation, storage and analytics portal to aid radiation therapy medical/clinical practitioners for better patient care and assessment of treatment plans

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*Technologies used: Angular, R, Node.js, d3.js, MongoDB, Javascript, Express, Apache*

2) *miRsnp: Identifying crucial SNPs and SNP-based miRNA interactions in diseases*
To identify SNP-based interactions and SNP-based miRNAs among disease specific miRNA-miRNA interaction networks by simulating the information diffusion flow

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*Technologies used: d3.js, MySQL, PHP, C, bash scripting*

3) *miRfluence: Determining causal miRNAs and their signaling cascade in pan-cancer diseases*
To simulate the cascading flow of information/influence diffusion among miRNA networks in diseases and identify causal miRNAs

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*Technologies used: Matlab, GLPK, C, MySQL, PHP, Javascript, d3.js, Jquery, bash*

4) *miRsig: Network inference of disease specific miRNA-miRNA interaction networks*
A statistical inference approach to predict miRNA-miRNA signature component across multiple disease categories

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*Technologies used: Matlab, R, JavaScript, Jquery, d3.js, MySQL, PHP,Apache, bash*

5) miRNA data sharing collaboration with Philip Morris International research group
A RESTful web service for external data extraction of miRNA-related data and development of *R* packages in collaboration with Philip Morris International research group *(ongoing)*

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*Technologies used: cURL, json, PHP, MySQL, R*

6) *iMiR: Visual analytics tool to study interaction networks of miRNAs*
A consolidated database of miRNA networks with diseases, TFs, genes, drugs, chemical and pathways with visual analytics for discovery

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*Technologies used: JavaScript, Jquery, d3.js (data visualization), MySQL, PHP, html, Apache*

7) *DISMIRA: miRNA-disease network discovery using maximum-weighted matching model and motif-based analysis*
Two network theoretic approaches to determine crucial miRNA-disease associations and interacting network structures

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*Technologies used: GLPK, Python, JavaScript, Jquery, d3.js (data visualization), MySQL, PHP, html, Apache*

8) *miRegulome*
An integrated online repository of entire regulatory modules of miRNA-omics data with integrative data analytics

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*Technologies used: JavaScript, Jquery, MySQL, PHP, html, Apache*

## Publications: Journals

1. Khajamoinuddin Syed, **Nalluri Joseph J.**, William Sleeman, Michael Hagan, Jatinder Palta, Rishabh Kapoor, and Preetam Ghosh. "Predicting Treatment Plans for Localized and Locally Advanced Prostate Cancer: A Multi-Center Clinical Practice Analysis" *Scientific Reports* (2018). *Under Review*

2. **Nalluri Joseph**, William Sleeman, Khajamoinuddin Syed, Paul Hudgins, William Nieporte, Ibrahim Ramadan, Jatinder Palta, Michael Hagan, Preetam Ghosh, Rishabh Kapoor, "Health Information Gateway and Exchange (HINGE): Radiation Oncology Data Analytics Portal" 2018.*American Association of Physicists in Medicine*

3. **Nalluri Joseph**, William Sleeman, Khajamoinuddin Syed, Paul Hudgins, William Nieporte, Ibrahim Ramadan, Jatinder Palta, Michael Hagan, Preetam Ghosh, Rishabh Kapoor, "HINGE: A demonstration of FHIR framework principles into an integrated health care platform for quality assessment, analytics and smart decision-support apps in Radiation Oncology" 2018.*American Association of Physicists in Medicine*

4. **Nalluri Joseph J.**, Pratip Rana, Debmalya Barh, Vasco Azevedo, Thang N. Dinh, Vladimir Vladimirov and Preetam Ghosh. "Determining causal miRNAs and their signaling cascade in diseases using an influence diffusion model" *Scientific Reports* 7 (2017). [IF: 5.5]

5. **Nalluri, Joseph J.**, Debmalya Barh, Vasco Azevedo, and Preetam Ghosh. "miRsig: a consensus-based network inference methodology to identify pan-cancer miRNA-miRNA interaction signatures." *Scientific Reports* 7 (2017). [IF: 5.5]

6. **Nalluri, Joseph J.**, Debmalya Barh, Vasco Azevedo, and Preetam Ghosh. "Towards a comprehensive understanding of miRNA regulome and miRNA interaction networks. *Journal of Pharmacogenomics & Pharmacoproteomics* 7, no. 160 (2016): 2153-0645. [IF: 1.55]

7. **Nalluri, Joseph J.**, Bhanu K. Kamapantula, Debmalya Barh, Neha Jain, Antaripa Bhattacharya, Sintia Silva de Almeida, Rommel Thiago Juca Ramos, Artur Silva, Vasco Azevedo, and Preetam Ghosh. "DISMIRA: Prioritization of disease candidates in miRNA-disease associations based on maximum weighted matching inference model and motif-based analysis. *BMC Genomics* 16, no. 5 (2015): 1. [IF: 3.86]

8. Barh, Debmalya, Bhanu Kamapantula, Neha Jain, **Joseph Nalluri**, Antaripa Bhattacharya, Lucky Juneja, Neha Barve et al. "miRegulome: a knowledge-base of miRNA regulomics and analysis. *Scientific Reports* 5 (2015). [IF: 5.5]

## Publications: Conferences

1. **Nalluri Joseph**, et al."A Smart Healthcare Portal for Clinical Decision Making and Precision Medicine" In *Proceedings of the 19th International Conference on Distributed Computing and Networking*, ACM, 2018.

2. **Nalluri Joseph**, Pratip Rana, Vasco Azevedo, Debmalya Barh, and Preetam Ghosh. "Determining influential miRNA targets in diseases using influence diffusion model. In *Proceedings of the 6th ACM Conference on Bioinformatics, Computational Biology and Health Informatics*, pp. 519-520. ACM, 2015. [Acceptance rate: 29%]

3. **Nalluri Joseph**, Bhanu Kamapantula, Preetam Ghosh, Debmalya Barh, et al."Determining mirna-disease associations using bipartite graph modeling. In *Proceedings of the International Conference on Bioinformatics, Computational Biology and Biomedical Informatics*, p. 672. ACM, 2013. [Acceptance rate: 29%]

## Publications: Book Chapters

1. Khajamoinuddin Syed, **Nalluri Joseph J.** and Preetam Ghosh. "Artificial intelligence methods in computer-aided diagnostic tools and decision support analytics for clinical informatics" *Artificial Intelligence in Precision Health* Ed. D. Barh. Elsevier, 2019. *Under preparation*

2. **Nalluri Joseph J.**, Debmalya Barh, Vasco Azevedo and Preetam Ghosh. "Bioinformatics and systems biology in bio-engineering." *Omics Technologies and Bio-engineering: Towards Improving Quality of Life.* Ed. D. Barh. Academic Press, 2017. Print.

3. Debmalys Barh, Eugenia Ch Yiannakopoulou, Emmanuel O Salawu, Atanu Bhattacharjee, Sudhir Chowbina, **Nalluri Joseph**, Preetam Ghosh, Vasco Azevedo, "In Silico Disease Model: From Simple Networks to Complex Diseases" *Animal Biotechnology: Models in discovery and translation.* Eds. Ashish Verma and Anchal Singh. Academic Press, 2017. Print.

## Presentations

- **Nalluri Joseph**, "Deciphering patterns of miRNA-disease interactions via network science" *Science Luncheon*, Zürich Med Tech, Zürich, Switzerland, 2015 (as part of summer internship)
- **Nalluri Joseph**, et al."Determining mirna-disease associations using bipartite graph modeling. In *Proceedings of the International Conference on Bioinformatics, Computational Biology and Biomedical Informatics*, p. 672. ACM, 2013.
- **Nalluri Joseph** and M. Mehrubeoglu, "Investigation of Hyperspectral Images of Biological Media through Parallel/Cluster Computing," *9th Annual Pathways Student Research Symposium*, Texas A&M University, College Station, Texas, November 2011 **[Awarded]**

## Teaching Experience

**Graduate Teaching Assistant** Jan. 2012 - Aug. 2012
COSC 2437.201 - Data Structures with Dr. Michael Scherger
College of Science and Engineering, TAMUCC
- Taught and supervised a class of 25-30 students on course material and labs

**Graduate Teaching Assistant** Jan. 2010 - May 2010
CHEM 4402 - Biochemistry II with Dr. Patrick Larkin
College of Science and Engineering, TAMUCC
- Taught and supervised a class of 60 students on course materials and labs

## Awards

- Best in Physics Poster, AAPM Annual Meeting April, 2018
  - Poster: Health Information Gateway and Exchange (HINGE): Radiation Oncology Data Analytics Portal
- $2^{nd}$ place at *3MT (Three Minute Thesis)* Speaking Contest March, 2017
- Doctoral Dissertation Fellowship, School of Engineering, VCU 2016-2017
  - Awarded to most accomplished final year Ph.D. candidates to complete the dissertation within the academic year by devoting full-time effort for research work
- Outstanding Early Career Student Researcher, Dept. of Comp. Sci., VCU Oct. 2014
- NSF Travel Award, ACM BCB Conference Sept. 2013
- Top 1% Superior Research Poster Presentation Nov. 2011
  - 9th Annual Pathways Student Research Symposium at Texas A&M University, College Station
  - This award was presented to only 2 students among 186 applicants. Research poster was based on the research work done in the Master's Thesis.
- Graduate Student Scholarship Jan. 2010 - May 2012

## References

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