TARUN KARTHIK KUMAR MAMIDI

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PROFESSIONAL SUMMARY

I am a fourth-year doctoral candidate at UAB focused on applying computational biology and data science methods to the study of human disease. I am driven to apply myself to helping to understanding the molecular basis of human diseases and passionate about a career where I can significantly contribute to science.

WORK EXPERIENCE

08/2019 to Current

PhD Researcher
The University of Alabama at Birmingham – Birmingham, AL
- Lab of Dr. Worthey
- Analysis of molecular variation on a case by case basis to identify causal variants in patients with rare genetic diseases
- Development of Machine Learning models to more efficiently and accurately diagnose patients with rare, undiagnosed, or misdiagnosed diseases.

10/2017 to 06/2019

Bioinformatics Analyst
Louisiana State University Health Sciences Center - New Orleans, LA
- Lab of Dr. Chindo Hicks
- Development of pipelines for next generation sequencing Analysis.
- Development of a shiny application "BIG-DE" for Differential Gene Expression Analysis. (https://tarunmamidi.shinyapps.io/lsuhsc_big_de/)
- Collaborative analysis to identify copy number variations in patient cohorts with prostate and lung cancers.
- Development of Machine Learning models to classify prostate cancer patients as Indolent and Aggressive by integrating mutation, methylation and transcriptome data.

08/2015 to 05/2017

Graduate Research Assistant
School of Informatics and Computing, IUPUI – Indianapolis, IN
- Lab of Dr. Xiaowen Liu.
- Analysis of large amounts of Mass spectrometric data using Trans Proteomic pipeline.
- Collaborated in development of a tool called TopPIC to identify and characterize proteoforms at the whole proteome level.
- Developed a database called GTRAP providing information from gene level to protein level. (Retired - https://g-trap.000webhostapp.com)

Summer 2013

PROJECT ENGINEER INTERN
AUROBINDO PHARMACEUTICALS – Telangana, India
- Assisted senior personnel in quality check of the pharmaceutical drugs.
- Part of the sterilization team ensuring that the production equipment were safe and sterile.

Summer 2012

PROJECT ENGINEER INTERN
Dr. Reddy's Laboratories – Telangana, India
- Worked with quality assurance team and chromatography lab and

generated detailed reports on proteins.

- Worked on spectrograph of proteins and created user defined views and reports from various database.

EDUCATION

Doctor of Philosophy, Aug 2019 – Present
University of Alabama at Birmingham, Alabama, USA

Master of Science, Bioinformatics, Aug 2015 - May 2017
Indiana University Purdue University Indianapolis, Indiana, USA

Bachelor of Technology, Biotechnology, Aug 2011 - May 2015
Gokaraju Rangaraju Institute of Engg. And Technology (JNTU), Telangana, INDIA

CURRENT RESEARCH

My long-term research interests focus on developing comprehensive tools/methods for bioinformatics analysis of biomolecular sequence data to diagnose patients with rare, undiagnosed, or misdiagnosed diseases. More specifically, my research falls under:
(a) understanding concepts of Machine learning and Artificial intelligence; and
(b) to apply these methods to help patients with rare, undiagnosed or misdiagnosed diseases and their families.

For this reason, I've joined Dr. Worthey's lab at UAB, who has more than 10 years of experience in developing and making use of tools for the identification and interpretation of molecular data to support definitive diagnosis and understanding of the genetic underpinnings of disease. I work on a number of disease areas:

Cystic Fibrosis
- Identification of modifier variants in CF patients that are capable of altering symptoms including CF lung disease, pancreatic status, diabetes, meconium ileus/intestinal obstruction, and nutritional status. Or capable of altering responses to CF drugs including CFTR modulators, with the goal of improved screening and patient outcomes.

Hepatic Cellular Carcinoma
- Identification of variants with links to cancer/HCC/liver disease to aid in increased understanding of the disease to improve patient's outcomes.

Prader-Willi Syndrome
- Investigating molecular variation in PWS, to aid in understanding of the differences in symptoms including behavioral problems, intellectual disability, and short stature amongst patients with the same or similar causal variants.

Pediatric cancer
- Identification of molecular variation associated with poor treatment outcomes related to cardiotoxicity in pediatric cancer patients.

Neuromuscular disease
- Identification of causal variation in patients with several distinct forms of neuromuscular disease which leads to muscle degeneration.

Undiagnosed Diseases Network
- Working with clinicians from many institutions and specialties to provide definitive molecular diagnoses for patients with rare, misdiagnosed or undiagnosed diseases by extracting knowledge from associated 'omic data.

HONORS

2021	Winning team at UAB AI Against Cancer Hackathon
2020	UAB Graduate Biomedical Sciences Service Award
2020	Winning team at UAB COVID-19 Data Science Hackathon
2019	Blazer Graduate Research Fellowship, UAB, Birmingham, AL
2015	International Academic Scholarship, IUPUI, Indianapolis, IN
2011	Merit Scholarship in Undergraduate, GRIET, Telangana, India

TEACHING EXPERIENCE

May 2022 – May 2022	Helper	Intro to Machine Learning Workshop, resbaz, AZ
Apr 2022 – Apr 2022	Guest lecture	GBS-748 Intro to Data Science, UAB
Oct 2021 – Oct 2021	Helper	Intro to Python Workshop, UAB
Aug 2021 – Aug 2021	Helper	Intro to R Workshop, UAB
Nov 2020 – Nov 2020	Helper	Intro to UAB HPC (Cheaha) workshop, UAB
Aug 2015 – Dec 2015	Graduate Teaching Assistant	Bioinformatics department, SoIC, IUPUI

VOLUNTEER EXPERIENCE

May 2022 – Aug 2022	Chair	UAB Data Science Hackathon, UAB
Jul 2022 – Jul 2022	Technical Volunteer	The World Games, Birmingham, AL
Aug 2021 - Present	Theme representative	GBS-GGB program, UAB
Aug 2021 - Present	International Student Liaison	GBS-GGB program, UAB
Aug 2020 - Present	Budget committee	Graduate Student Government, UAB
Aug 2020 - Present	Student Mentor	GBS program, UAB
Sep 2020 – Present	Secretary	UAB Cricket Club, UAB
Apr 2020 – Jan 2021	Co-chair	COVID-19 student taskforce, UAB
Sep 2019 – Present	Secretary	Association of Indian Students, UAB
Sep 2019 – Jun 2021	Founder and President	Informatics Club, UAB
Aug 2018 – Jul 2019	External relations Liaison	International Student Association, LSUHSC

PUBLICATIONS

- ORCID - https://orcid.org/0000-0002-9484-257X
- Scholar - https://scholar.google.com/citations?hl=en&user=2rzGJ7QAAAAJ

PRESENTATIONS

- **Mamidi, T.K.K.,** et.al; Diagnosing Rare Diseases in HDD (HAZEL, DITTO, DExTR). Oral presentation at GBS Symposium 2022, UAB, AL
- M Robinson, **T Mamidi,** E Worthey, R Melvin, R Chkheidze; Automated Pipeline to Identify Infiltrating Subpopulations of Glioblastoma Cells. Oral presentation at Journal Of Neuropathology And Experimental Neurology 2022
- **Mamidi, T.K.K.,** et.al; Deleterious prediction of Rare Disease variants using Artificial Intelligence. Oral presentation at GBS Symposium 2021, UAB, AL
- **Mamidi, T.K.K.,** et.al; Diagnosing Rare Diseases in HD (HAZEL + DITTO). Poster presentation at ACMG 2021, Virtual
- **Mamidi, T.K.K.,** et.al; Prioritizing clinically reported variants with binary classification algorithms. Oral presentation at GBS Symposium 2020, UAB, AL
- **Mamidi, T.K.K.;** Wu, J.; Hicks, C. Classification of prostate cancer patients as indolent or aggressive using machine learning approach. Poster session presented at LBRN 2019, Baton Rouge, LA.
- **Mamidi, T.K.K.;** Wu, J.; Hicks, C. Classification of prostate cancer patients as indolent or aggressive using machine learning approach. Poster session presented at ASHG 2018, San Diego.
- Wu, J.; **Mamidi, T.K.K.;** Hicks, C. Breast Cancer Type Classification Using Machine Learning Approach. Poster session presented at ASHG 2018, San Diego.
- Hicks, C.; **Mamidi, T.K.K.;** Wu, J.;. An Integrative Approach for Mapping the Mutation Landscape of DNA REPAIR GENES and Pathways in Prostate Cancer. Poster session presented at ASHG 2018, San Diego.
- D. Mandal, D. Tran, K. Termine, **T. Mamidi**, A. Musolf, M. Baddoo, M. de Andrade, C. Gaba, P. Yang, M. You, M.W. Anderson, A.G. Schwartz, S.M. Pinney, C.I. Amos, J.E. Bailey-Wilson. Analysis of targeted sequencing data of hereditary lung cancer families identifies germline copy number variations (CNVs) in multiple genes. Poster session presented at ASHG 2018, San Diego.
- K. Wood, **T. Mamidi**, M. Baddoo, M. DeRycke, S. Riska, S. McDonnell, D. Schaid, S. Thibodeau, J. Carpten, C. D. Cropp, D. Mandal. Analysis of Next-Generation Sequencing Data on African American Hereditary Prostate Cancer Cases Identifies CNVs in Multiple Genes. Poster session presented at ASHG 2018, San Diego.
- **Mamidi, T.K.K.;** Wu, J.; Hicks, C. Mapping the germline and somatic mutation landscape in indolent and aggressive Prostate Cancer. Poster session presented at ISMB 2018, Chicago & LBRN 2018, Louisiana.
- Wu, J.; **Mamidi, T.K.K.;** Hicks, C. Computational Analysis of Germline and Somatic Mutation Landscape in ER-Positive and Tripe Negative Breast Cancer. Poster session presented at ISMB 2018, Chicago.
- Hicks, C.; **Mamidi, T.K.K.;** Wu, J.;. Computational Analysis of Crosstalk Between Germline and Somatic Mutation Modulated Pathways in Prostate Cancer. Poster session presented at ISMB 2018, Chicago.
- Wu, J.; **Mamidi, T.K.K**.; Hicks, C. Integrating Germline and Somatic Mutation Information for the Discovery of Biomarkers in Triple Negative Breast Cancer. Poster session presented at LBRN 2018, Louisiana.
- Hicks, C.; **Mamidi, T.K.K.;** Wu, J.;. Bioinformatics approaches for integrating genotype and tumor genomic data in cancer. Poster session presented at LBRN 2018, Louisiana.
- **Mamidi, T.K.K.;** Pradhan, M.; Palakal, M.J. Classification of Glioblastoma Multiforme (GBM) subtypes by Gene Expression level using Machine Learning algorithms. Poster session presented at IU Cancer Research day 2016, Indianapolis.