Jayaram Kancherla

jkanche@umiacs.umd.edu | Github | Google Scholar | jkanche.com

---

Institution & Affiliation

Current Appointments

Faculty Specialist   *Jan 2016 - Present*
Center for Bioinformatics and Computational Biology (CBCB)
University of Maryland Advanced Computer Studies (UMIACS)

Address

Brendan Iribe Center for Computer Science
Rm #3224
8125 Paint Branch Drive
College Park
Maryland 20745

Education

- PhD in Computer Science   *Jan 2019 - Present*
  University of Maryland, College Park

- Masters in Computer Science   *Aug 2009 - May 2011*
  North Carolina State University, Raleigh

- Bachelors in Computer Science and Engineering   *Oct 2005 - Apr 2009*
  V.R. Siddhartha Engineering College
  Affiliated to Nagarjuna University, India

MOOC Courses

- Introduction to Big Data with Apache Spark - edX   *Jul 2015*

- Scalable Machine Learning - edX   *Aug 2015*

Conferences, Workshops, and Talks

Publications

- **[Accepted] Jayaram Kancherla***, Shruti Rao*, Krithika Bhuvaneshwar, Rebecca B. Riggins, Robert A. Beckman, Subha Madhavan, Héctor Corrada Bravo, Simina M. Boca. An evidence-based network approach to recommending targeted cancer therapies *bioRxiv* 605261; doi: 10.1101/605261 **(*equal contribution)**

- **[Under Review] Jayaram Kancherla**, Yifan Yang, Hector Corrada Bravo. Epiviz File Server: Query, Transform and Interactively Explore Data from Indexed Genomic Files. *bioRxiv* 865295; doi: https://doi.org/10.1101/865295

- Zhe Cui, Jayaram Kancherla, Kyle W Chang, Niklas Elmqvist, Héctor Corrada Bravo, Proactive visual and statistical analysis of genomic data in Epiviz, *Bioinformatics*, btz883, https://doi.org/10.1093/bioinformatics/btz883 **(*equal contribution)**

- Nathan D Olson, Nidhi Shah, **Jayaram Kancherla**, Justin Wagner, Joseph N Paulson, Hector Corrada Bravo. metagenomeFeatures: an R package for working with 16S rRNA reference databases and marker-gene survey feature data, *Bioinformatics*, btz136, 10.1093/bioinformatics/btz136

- **Kancherla J**, Zhang A, Gottfried B and Bravo HC. Epiviz Web Components: reusable and extensible component library to visualize functional genomic datasets. *F1000Research* 2018, 7:1096 DOI: 10.12688/f1000research.15433.1

- Justin Wagner*, Florin Chelaru*, **Jayaram Kancherla***, Joseph N Paulson*, Alexander Zhang, Victor Felix, Anup Mahurkar, Niklas Elmqvist, Héctor Corrada Bravo; Metaviz: interactive statistical and visual analysis of metagenomic data, *Nucleic Acids Research*, Volume 46, Issue 6, 6 April 2018, Pages 2777–2787, 10.1093/nar/gky136 **(*equal contribution)**

- Gary Ginsberg, Suryanarayana V Vulimiri, Yu-Sheng Lin, **Jayaram Kancherla**, Brenda Foos & Babasaheb Sonawane (2017) A framework and case studies for evaluation of enzyme ontogeny in children's health risk evaluation, *Journal of Toxicology and Environmental Health*, Part A, 80:10-12, 569-593, DOI: 10.1080/15287394.2017.1369915

- Collaborative Estrogen Receptor Prediction Project for EDSP Prioritization. *Environmental Health Perspectives* (2016) 10.1289/ehp.1510267

- The ToxCast Chemical Landscape: Paving the Road to 21st Century Toxicology. *Chemical Research in Toxicology* (2016) DOI: 10.1021/acs.chemrestox.6b00135

Workshops

- Interactive visualization and data analysis with epiviz web components *July 27-28, 2017* (Differential Gene Expression analysis using minfi)
  Jayaram Kancherla, Hector Corrada Bravo, Brian Gottfried
  BioC 2017, Dana Farber Cancer Institute
  Boston, MA

- Metaviz Interactive Statistical and Visual Analysis using data *June 2017* from Human Microbiome Project
  University of Maryland Institute of Genomic Science
  Baltimore, MD

- Interactive visualization with epiviz $\qquad$ *June 25-26, 2016*
  Héctor Corrada Bravo, Jayaram Kancherla, Justin Wagner, Deok Park
  BioC 2016, Stanford University
  Stanford, CA

Presentations & Posters

- Epiviz File Server – Query, Compute and Interactive Exploration of data from Indexed Genomic Files, BOSC, *International Society for Molecular Biology* (ISMB/ECCB 2019), July 21-25, 2019, Basel, Switzerland (Presentation & Poster) 10.7490/f1000research.1117422.1

- Proactive Visual and Statistical Analysis of Genomic Data in Epiviz, BioVis, *International Society for Molecular Biology* (ISMB/ECCB 2019), July 21-25, 2019, Basel, Switzerland (Presentation & Poster) 10.7490/f1000research.1117423.1

- Jayaram Kancherla, Bob Sonawane, Bruce Fowler. Determination of Permissible Daily Exposures in Human Drug Products for Elemental Impurities via the Transdermal Delivery Route. *Society of Toxicology* 2019, March 10-14, Baltimore, MD (Presentation) link

- Richard, A., C. Grulke, I. Thillainadarajah, K. Mansouri, J. Kancherla, R. Judson, A. Williams., 2015. EPAs DSSTox Chemical Database: A Resource for the Non-Targeted Testing Community. *EPA NTA workshop.* August 18-19, RTP, NC 10.23645/epacomptox.5077765

- Mansouri, K., Kancherla J., Richard A., Judson R., 2015. EDSP Prioritization: Collaborative Estrogen Receptor Activity Prediction (CERAPP). *Society of Toxicology 54th Annual Meeting.* March 22-26, San Diego, CA. (Poster) 10.23645/epacomptox.5178844

- Strope C.L., Mansouri K., Kancherla J., Stevens C., Wambaugh J.F., 2014. Throughput Pharmacokinetic Modeling Using Computationally Predicted Parameter Values: Dissociation Constants. US EPA –NCCT, *Second ToxCast Data Summit*, September 29-30, Durham, NC (Poster) 10.23645/epacomptox.5197147

- Kancherla J., Mansouri K., Truong H., Richard A.M., Judson R., 2014. ACToR Chemical Structure processing using Open Source Cheminformatics Libraries. *Society of Toxicology, Future Tox II National Meeting.* January 16-17, Chapel Hill, NC. (Poster) 10.23645/epacomptox.5197126

- Vulimiri S.V., Kancherla J., Lin YS., Ginsberg G., Foos B., Sonawane B., 2014. Scoping the need for PBPK modeling of Child-Adult Metabolism Differences: Case Studies Applying an Enzyme Ontogeny Database. *Society of Toxicology 53rd Annual Meeting.* March 23-27, Phoenix, AZ. (Poster)

- Watford S., Edwards J., Linnenbrink M., Kancherla J., Martin M., 2014. Web Application Supporting Chemical Safety Decisions. *Society of Toxicology 53rd Annual Meeting.* March 23-27, Phoenix, AZ. (Poster)

Service & Outreach

Journal Review

- Journal of Open Source Software (JOSS) 2019

- American Medical Informatics Association (AMIA) 2020 Informatics Summit

Research Fellowships & Awards

Fellowships

- Oakridge Science Research Fellowship (ORISE)
  National Center for Computational Toxicology (NCCT)
  U.S. Environmental Protection Agency
  Research Triangle Park, Durham, NC
  Fellowship #EPA-ORD/NCCT-2012-19   *Aug 2013 - Dec 2015*
  Title: Design and Development of Computational Decision Support Systems
  The overall goal of the project is to integrate High Throughput Screening (HTS) data from the ToxCast project & the Tox21 initiative with other EPA data sources and, build interactive tools and applications to visualize HTS data and for characterizing risk assessment and prioritization of chemicals.

- Student Research Trainee
  National Center for Environmental Assessment (NCEA)
  U.S. Environmental Protection Agency
  Crystal City, Arlington, VA
  Fellowship #EP-11-H-001649   *Sep 2011 - Aug 2013*
  Title: Sustainable Community Assessment platform
  I worked with the US Census & sustainable communities to create a platform to share environmental data. Identified use cases and created an ideation platform to engage stakeholders and communities to make sustainable decisions. Developed tools to visualize data shared through the platform.
  Enzyme Ontogeny: Text mining to collect metabolism & enzyme ontogeny data from published literature. Visualize time series data for enzyme expression across different life stages.

Honors & Awards

- Travel Fellowship, ISMB/ECCB 2019   *July 2019*

- Travel Fellowship, Society of Toxicology (SOT), Future Tox II   *Jan 2014*

- STARS (Students & Technology in Academia, Research and Service)   *Feb 2011*
  Student Volunteer Award, North Carolina State University

Teaching & Mentoring

Guest Lectures

Next Generation Toxicology and Computational Toxicology Databases   Apr 30, 2019
EMAP 514 – Introduction to Environmental Health Risk Assessment & Management
Environmental Metrology and Policy Program
Georgetown University, Washington DC

Co-supervised Students

Undergraduate (at UMD)

- Lan Tran, CS, Graduated

- Alexander Zhang, CS, Graduated

- Brian Gottfried, CS Graduated

- Yifan Yang, CS, Current

- Kyle Chang, CS, Current

Mentoring Activities

- CSC 116 Tutor   *Aug 2010 - Mar 2011*
  North Carolina State University, NC

- Mentor for STARS Student Leadership Corps (SLC)   *Aug 2010 - Mar 2011*
  STARS Student Leadership Corps (SLC)
  North Carolina State University, NC

Research Experience

Positions

- Faculty Specialist (with *Dr. Hector Corrada Bravo*)   *Sep 2019 - Present*
  Faculty Research Assistant   *Jan 2016 - Sep 2019*
  University of Maryland, College Park, MD

  I work on the development of interactive statistical and exploration tools for genomic datasets.

  ### Tools

  - Epiviz - Interactively explore epigenetic data sets
  - Metaviz - Interactively explore metagenomic data sets
  - Epiviz File Server - Interactively explore data directly from genomic files

  ### Bioconductor R Packages

  - EpivizrChart - Interactively visualize R/Bioconductor data objects with epiviz web components
  - EpivizStandalone - Installs and runs a local version of epiviz
  - Epivizr - R interface to the epiviz web application
  - Metavizr - Interactively visualize metagenomic data sets

- Oakridge Science Research Fellow (with: *Dr. Richard Judson*)   *Aug 2013 - Dec 2015*

  National Center for Computational Toxicology (NCCT)
  U.S. Environmental Protection Agency
  Durham, NC

  ### Dashboards & Tools

  Dashboard systems are developed to interactively explore and visualize High Throughput Screening (HTS) data from the ToxCast program (1800 chemicals tested in 700 assays). I designed and developed the framework for building interactive dashboards. I was also responsible for managing and integrating the HTS data with existing EPA datasets (ExpoCast, PhysChem, ToxRef etc) for building QSAR models and analysis. I developed the following publicly available dashboards at the US.

– EPA ToxCast Dashboard (http://actor.epa.gov/dashboard)

– Endocrine Disruptor Screening Program (http://actor.epa.gov/edsp21/)

ACToR (http://actor.epa.gov)

Aggregated Chemical Toxicology Resource (ACToR) is a widely used data repository that aggregates publicly available chemical structure data and toxicity information from over 3000 sources. I worked on developing and optimizing this repository, parsing, curating and validating chemical structures with various public domains (DSSTox, PubChem, SRS, HPVIS and ChemIDplus), calculating structural properties (RDKIT) and fingerprints for structure search (jChem).

Data Mining & Other Contributions

– **PhysChemDB** – created a physico-chemical properties database by mining data from published literature and publicly available databases. It is available as a web service and is used by the dashboards

– **DSSTox chemical curation** – text mining and scripts to extract/clean chemical names, synonyms and CAS registry numbers from STN record documents and public databases

- Student Research Trainee   *Sep 2011 - Aug 2013*
  National Center for Environmental Assessment (NCEA)
  U.S. Environmental Protection Agency
  Arlington, VA

  ### Sustainable Community Assessment Platform (Mentor: *Rick Ziegler*)
  I worked with the US Census & sustainable communities to create a platform to share environmental data. Identified use cases and created an ideation platform to engage stakeholders and communities to make sustainable decisions. Developed tools to visualize data shared through the platform.

  ### Enzyme Ontogeny (Mentors: *Dr. Bob Sonawane & Dr. Suryanarayana Vulimiri*)
  Text mining to collect metabolism & enzyme ontogeny data from published literature. Visualize time series data for enzyme expression across different life stages.

Research Software and Applications

- Epiviz File Server: Query and Transform directly from indexed genomic files
  GitHub: https://github.com/epiviz/epivizFileParser
  Published to PyPI: https://pypi.org/project/epivizFileServer

- Epiviz Feed: Proactive interactive and statistical visualization of genomic data
  The Epiviz Feed application for the cancer epigenetics use case is hosted on an AWS instance and is available at http://54.157.53.251/browser
  User Interface: https://github.com/epiviz/epiviz_feed_polymer
  Computational Server: https://github.com/epiviz/epiviz-feed-computation

- CDGnet: Network visualization for precision medicine
  The CDGnet tool is hosted at http://epiviz.cbcb.umd.edu/shiny/CDGnet
  https://github.com/jkanche/nfpmShinyComponent

- Epiviz Components: Web Components for interactive visualization of genomic data
  Epiviz Chart - https://github.com/epiviz/epiviz-chart
  Epivizr Chart - https://github.com/epiviz/epivizrChart

- Interactive visualization of metagenomic data
  Metaviz - https://github.com/epiviz/metaviz
  Metavizr - https://github.com/epiviz/metavizr

- Interactive visualization of functional genomics data
  Epiviz - https://github.com/epiviz/epiviz
  Epivizr - https://github.com/epiviz/epivizr

Skills

Programming	-	JavaScript, Python, R, Go
Data Management	-	MySQL, Neo4j
Frameworks	-	Polymer, Flask, Sanic, d3Js
Tools	-	KNIME, Apache Spark
Chemo Informatics	-	RDKIT, Indigo

Work Experience

- Web Developer   *Oct 2010 - May 2011*
  North Carolina State University, NC

- STARS Website Developer (Volunteer)   *Aug 2010 - Mar 2011*
  STARS Student Leadership Corps (SLC)
  North Carolina State University, NC

- Transcriber   *Nov 2009 - Apr 2010*
  University Disability Services,
  North Carolina State University, NC