Jayaram Kancherla

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Institution & Affiliation

Current Position

Bioinformatics Software Engineer
Genentech, *A Member of the Roche Group*
South San Fransisco, California

Education

- 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

Conferences, Workshops, and Talks

Publications

1. **[Preprint]** Mohamed K. Gunady, **Jayaram Kancherla**, Héctor Corrada Bravo, Soheil Feizi. scGAIN: Single Cell RNA-seq Data Imputation using Generative Adversarial Networks. *bioRxiv* 837302; doi: 10.1101/837302
2. **[Preprint]** Bakken, Trygve E., et al. Evolution of cellular diversity in primary motor cortex of human, marmoset monkey, and mouse. *bioRxiv* 2020.03.31.016972; doi: 10.1101/2020.03.31.016972
3. **[Preprint]** Zizhen Yao., et al. An integrated transcriptomic and epigenomic atlas of mouse primary motor cortex cell types. 2020.02.29.970558; doi: 10.1101/2020.02.29.970558
4. **[Preprint]** BRAIN Initiative Cell Census Network etc al. A multimodal cell census and atlas of the mammalian primary motor cortex. bioRxiv 2020.10.19.343129; doi: 10.1101/2020.10.19.343129
5. **Jayaram Kancherla,** Yifan Yang, Hyeyun Chae, Hector Corrada Bravo, Epiviz File Server: Query, transform and interactively explore data from indexed genomic files, *Bioinformatics*, Volume 36, Issue 18, 15 September 2020, Pages 4682–4690, doi: 10.1093/bioinformatics/btaa591
6. Wagner J, **Kancherla J**, Braccia D et al. Interactive exploratory data analysis of Integrative Human Microbiome Project data using Metaviz. *F1000Research* 2020, 9:601. doi: 10.12688/f1000research.24345.1
7. **[*equal contribution] 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. JCO Clinical Cancer Informatics no. 4 (2020) 71-88; doi: 10.1200/CCI.19.00097

8. Z. Cui, **J. Kancherla**, H. C. Bravo and N. Elmqvist, Sherpa: Leveraging User Attention for Computational Steering in Visual Analytics. 2019 IEEE Visualization in Data Science (VDS), Vancouver, BC, Canada, 2019, pp. 48-57. doi: 10.1109/VDS48975.2019.8973384
9. **[*equal contribution]** Zhe Cui*, **Jayaram Kancherla***, Kyle W Chang, Niklas Elmqvist, Héctor Corrada Bravo, Proactive visual and statistical analysis of genomic data in Epiviz, *Bioinformatics*, btz883, doi: 10.1093/bioinformatics/btz883
10. Nathan D Olson, Nidhi Shah, **Jayaram Kancherla**, Justin Wagner, Joseph N Paulson, Héctor Corrada Bravo. metagenomeFeatures: an R package for working with 16S rRNA reference databases and marker-gene survey feature data, *Bioinformatics*, btz136, doi: 10.1093/bioinformatics/btz136
11. **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
12. **[*equal contribution]** 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, doi: 10.1093/nar/gky136
13. 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
14. Mansouri, Kamel et al. Collaborative Estrogen Receptor Prediction Project for EDSP Prioritization. *Environmental Health Perspectives* (2016); doi: 10.1289/ehp.1510267
15. Richard M.A. et al. The ToxCast Chemical Landscape: Paving the Road to 21st Century Toxicology. *Chemical Research in Toxicology* (2016) doi: 10.1021/acs.chemrestox.6b00135

Book Chapters

- Kanchana Padmanabhan, Brent Harrison, Kevin Wilson, Michael L. Warren, **Jayaram Kancherla**, Katie Bright, Justin Mosiman, Hieu Phung, Benjamin Miller, and Sam Shamseldin, 2013. ClusterAnalysis, Practical Graph Mining with R, CRC Press. ISBN: 9781439860847

Presentations & Posters

1. **Jayaram Kancherla**, Kazi Zinat Tasnim, Hector Corrada Bravo, Hierarchical interactive exploration and analysis of single cell RNA-seq datasets, Biological Data Science, November 4-6 2020. CSHL BDS (Presentation & Poster)
2. **Jayaram Kancherla**, Héctor Corrada Bravo. Quickly compose custom interactive genomic visualization apps in R/Bioc with epiviz components. BioC 2020, July 29 - 31, 2020. (Presentation)
3. **Jayaram Kancherla**, Yifan Yang, Héctor Corrada Bravo. Epiviz File Server – Query, Compute and Interactive Exploration of data from Indexed Genomic Files, BOSC, *International Society for Molecular Biology* (ISMB/ECCB), July 21-25, 2019, Basel, Switzerland 10.7490/f1000research.1117422.1 (Presentation & Poster)
4. **Jayaram Kancherla**, Zhe Cui, Héctor Corrada Bravo. 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 10.7490/f1000research.1117423.1 (Presentation & Poster)

5. **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
6. B.R. Sonawane, G. Ginsberg, and **J. Kancherla**, 2018. Role on Enzyme Ontogeny in Evaluation of Aceteminophen Metabolism and Hepatotoxicity in Children. *Society of Toxicology* 2018. March 11-15, San Antonio, TX (Presentation)
7. Richard, A., C. Grulke, I. Thillainadarajah, K. Mansouri, **J. Kancherla**, R. Judson, A. Williams., 2015. EPA DSSTox Chemical Database: Resource for the Non-Targeted Testing Community. *NTA workshop*. August 18-19, RTP, NC 10.23645/epacomptox.5077765
8. 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. (Presentation & Poster) 10.23645/epacomptox.5178844
9. Mansouri K, **Kancherla J**, Judson R.S., 2014. CERAPP - Collaborative Estrogen Receptor Activity Prediction Project. *US EPA Chemical Safety Research: Second Toxcast Data Summi*t, September 29-30, Durham, NC 27711. Weblink
10. Cory Strope, Kamel Mansouri, **Jayaram Kancherla**, Caroline Stevens, John Wambaugh., 2014. High Throughput Pharmacokinetic Modeling Using Computationally Predicted Parameter Values: Dissociation Constants. *US EPA Chemical Safety Research: Second Toxcast Data Summi*t, September 29-30, Durham, NC 27711. Weblink
11. 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 10.23645/epacomptox.5197147
12. **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
13. 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)
14. 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)

Accepted Bioconductor Packages

- **Kancherla J**, Gottfried B, Corrada Bravo H. epivizrChart: R interface to epiviz web components. R package. doi: 10.18129/B9.bioc.epivizrChart
- Bravo HC, Chelaru F, Smith L, Goldstein N, **Kancherla J**, Walter M, Gottfried B. epivizr: R Interface to epiviz web app. R package. doi: 10.18129/B9.bioc.epivizr
- **Kancherla J**, Bravo HC. epivizrStandalone: Run Epiviz Interactive Genomic Data Visualization App within R. R package. doi: 10.18129/B9.bioc.epivizrStandalone
- Corrada Bravo H, Chelaru F, Wagner J, **Kancherla J**, Paulson J. metavizr: R Interface to the metaviz web app for interactive metagenomics data analysis and visualization. R package. doi: 10.18129/B9.bioc.epivizrChart

Workshops

- BICCN Omics Workshop - *Jan 20 & 27, 2021*
  https://nemoarchive.org/biccn-omics-workshop/
- Interactive visualization and data analysis with Epiviz web - components (Differential Gene Expression analysis using minfi) *Jul 27-28, 2017*
  Jayaram Kancherla, Brian Gottfried, Héctor Corrada Bravo
  BioC 2017, Dana Farber Cancer Institute, Boston, MA
- Metaviz Interactive Statistical and Visual Analysis using data from Human Microbiome Project *Jun 2017*
  Justin Wagner, Jayaram Kancherla, Héctor Corrada Bravo
  University of Maryland Institute of Genomic Science, Baltimore, MD
- Interactive visualization of microbiome data using Metaviz *Nov 1-2, 2016*
  Jayaram Kancherla, Héctor Corrada Bravo
  Mid Atlantic Microbiome Conference, College Park, MD
- Interactive visualization with epiviz *Jun 25-26, 2016*
  Héctor Corrada Bravo, Jayaram Kancherla, Justin Wagner, Deok Park
  BioC 2016, Stanford University, Stanford, CA
- Interactive Genomic Data Analysis and Visualization using Epiviz *Jun 15, 2016*
  Jayaram Kancherla
  International Society for Computational Biology, DC RSG

Research Grants, Fellowships & Awards

Grants

- Integrative Visual and Computational Exploratory *Jan 2016 - Oct 2020*
  Analysis of Genomics Data
  Grant # R01GM114267-02
  Role: Scholar
- Integration of 3D primary tumor drug-profiling with *Jun 2016 - May 2018*
  patient-specific drug gene networks for recommending targeted cancer therapies
  Grant # R21CA220398-02
  Role: Co-investigator

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

- Level III EPA Scientific and Technological Achievement Award *2019*
- Travel Fellowship, ISMB/ECCB 2019 *Jul 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

Service & Outreach

Reviewer

- Journal of Open Source Software (JOSS)
- American Medical Informatics Association (AMIA) 2020, 2021 Informatics Summit
- RECOMB CCB 2019
- ACM-BCB 2016

Research Experience

Positions

- Bioinformatics Software Engineer III *Oct 2020 - Present*
  Genentech, *A Member of Roche Grou*p
  South San Fransisco, CA
- Faculty Specialist (with *Dr. Hector Corrada Bravo*) *Sep 2019 - Oct 2020*
  Faculty Research Assistant *Jan 2016 - Sep 2019*
  University of Maryland, College Park, MD

  My research focuses on development of tools and methods for interactive statistical exploration and visualization of large scale genomic datasets. I primarily work on the development of the Epiviz (http://www.epiviz.org) and Metaviz (http://www.metaviz.org) suite of tools.
- 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, and 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 worked on the following publicly available dashboards

- 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

(Complete list available on GitHub [id: jkanche])

- 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
  doi: 10.5281/zenodo.3841643
- 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
  doi: 10.5281/zenodo.3373762
- 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
  R package - Epivizr - https://github.com/epiviz/epivizrChart
- Interactive visualization of metagenomic data
  Metaviz - https://github.com/epiviz/metaviz
  R package - Metavizr - https://github.com/epiviz/metavizr
- Interactive visualization of functional genomics data
  Epiviz - https://github.com/epiviz/epiviz
  R package - Epivizr - https://github.com/epiviz/epivizr
- EPA ToxCast Dashboard - http://actor.epa.gov/dashboard
- EPA Endocrine Disruptor Screening Program - http://actor.epa.gov/edsp21/

Skills

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

MOOC Courses

- Introduction to Big Data with Apache Spark - edX *Jul 2015*
- Scalable Machine Learning - edX *Aug 2015*

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

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 2016*
- Alexander Zhang, CS, *Graduated 2018*
- Brian Gottfried, CS, *Graduated 2018*
- Hyeyun Chae, Intern, *Summer 2019*
- Yifan Yang, CS, *Graduated 2020*
- Kyle Chang, CS, *Graduated 2020*

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