

## Contact

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(LinkedIn)

## Top Skills

Matlab

Data Analysis

C++

## Languages

English (Native or Bilingual)

Hindi (Native or Bilingual)

## Publications

Re-programming DNA-binding specificity in zinc finger proteins for targeting unique address in a genome.

Probing of RNA structures in a positive sense RNA virus reveals selection pressures for structural elements

Genome-wide discovery of DEAD-box RNA helicase targets reveals RNA structural remodeling in transcription termination

Protein Distributions from a Stochastic Model of the lac Operon of E. coli with DNA Looping: Analytical solution and comparison with experiments.

Analytical Expressions and Physics for Single-Cell mRNA Distributions of the lac Operon of E. coli

# Krishna Choudhary

Data Scientist | Biomedical Engineer | Every dataset has a story to tell

San Francisco Bay Area

## Summary

Strong professional with solid background and experiences in Data Science, Genomics, Statistics, Stochastic and Deterministic Modeling, Computer Programming, Machine Learning, Bioprocess Engineering, Biotechnology, Chemical Product & Process Designing. Independent; collaborative and team player; able to deliver on time in fast-paced multidisciplinary environments.

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## Experience

University of California, San Francisco

Postdoctoral Scholar

April 2021 - Present (4 years 3 months)

San Francisco Bay Area

- Developed a novel cost-effective platform for large-scale microscopy-based CRISPR screens.

- Harmonized wet lab and computational methods to deliver high sensitivity and specificity in debarcoding pooled CRISPR perturbations.

- Manuscript in preparation.

Work involved:

- statistical methods development for image analysis.

- software development for scalable image analysis using nextflow, Python, R, and MATLAB.

- wet-lab platform development: novel lentivirus vector designs for CRISPR library, multiplexed imaging, flow cytometry, virus production, mammalian tissue culture.

## Gladstone Institutes

2 years 2 months

Bioinformatician II, Bioinformatics Core

January 2020 - March 2021 (1 year 3 months)

San Francisco Bay Area

Select projects:

- Analysis of scATAC-seq, scRNA-seq, ChIP-seq datasets to understand the genetic causes underlying cardiovascular diseases
- Developed and tested a method for integrative analysis of HiC, ChIP-seq and RNA-seq datasets
- Various analyses for SARS-CoV-2 related research, e.g., studying interfering particles, gRNA evaluation for CRISPR-based diagnostics, etc.

Other contributions:

- Led team efforts to adopt Singularity/Docker containers and Nextflow workflow manager

Instructor, Gladstone/UCSF Bakar Institute Data Science Training Program

February 2019 - March 2021 (2 years 2 months)

San Francisco Bay Area

- ~100 hrs of instruction reaching ~750-1000 graduate students, postdocs and faculty at UCSF
- Developed and instructed hands-on data analysis and statistical discussion workshops with the following titles.

1. Current practices in single-cell RNA-seq analysis
2. Introduction to RNA-seq analysis
3. Intermediate RNA-seq analysis
4. Introduction to R for data analysis
5. Intermediate R: Data visualization using ggplot2

Biostatistician I, Bioinformatics Core

February 2019 - December 2019 (11 months)

San Francisco Bay Area

Select projects:

- Exploring the mechanism of post-transcriptional regulation of the cardiac transcriptome

- Quantifying the clinical relevance of next-generation DNA sequencing for HPV genotyping
- Exploring the mechanism of HIV latency and identifying its biomarkers

Analyzed large-scale data from a variety of deep sequencing-based assays. Some of the data types I worked with are listed below.

- Whole genome sequencing data for single-nucleotide variants,
- eCLIP-seq data for RNA-protein interactions,
- bulk RNA-seq data for differentially expressed genes and alternative splicing,
- small RNA-seq for microRNA biomarker identification,
- amplicon sequencing data for HPV genotyping,
- mixed-species RNA-seq data, etc.

## University of California, Davis

4 years 4 months

### Teaching Assistant

September 2015 - December 2018 (3 years 4 months)

Sacramento, California, United States

- Probability and Statistics (Fall quarter, 2018)
- Big Data in Genomics (Fall Quarters, 2015 and 2016).

### PhD Candidate

September 2014 - December 2018 (4 years 4 months)

Sacramento, California Area

- Worked at Computational RNA Genomics Lab.
- Thesis title: Statistical Methods and Software for Comparative Analysis of RNA structurome profiling data.
- Collaborated with domestic and international experimental labs.
- Results :

- Developed a novel statistical method for differential RNA structurome analysis.
- Developed quantitative and visual methods for evaluating data quality.
- Delivered biological insights by application of tailored statistical methods and software in three separate experimental projects.
- Designed software tools using MongoDB, Python, Bokeh, R, Shiny.

- Other duties in the lab :

- a. Mentored undergraduate and high school interns.
- b. Collaborated with other lab members.
- c. Assisted maintenance of lab infrastructure.

## Roche Molecular Systems

### Oncology Bioinformatics Intern

June 2017 - August 2017 (3 months)

San Francisco Bay Area

Developed a machine learning approach for classifying germline variants found in a liquid biopsy assay. Work involved

- Scripting in Python, R, Bash,
- Training and testing a machine learning classifier,
- Documenting using Git, communicating results to assay development team.

## EuMentis Informatics

### Statistical Analyst & Market Researcher

January 2014 - August 2014 (8 months)

- Contributed ideas for sequencing data analysis in a project.
- Project aimed to diagnose drug-resistance in tuberculosis.
- Researched bioinformatics services market in India.

## SupraTech Chemicals

### Chemical Product & Process Designer (Entrepreneur)

August 2012 - August 2014 (2 years 1 month)

Kolkata Area, India

- Developed product formulations for metal polishes.
- Formulated plan for a low-cost manufacturing unit.
- Helped develop a marketing strategy.
- Managed supply line for raw materials and manufacturing process.
- Released first product with a good market response.

## STC Jewellers

### Web Development & E-commerce Consultant

January 2014 - May 2014 (5 months)

Kolkata Area, India

- Aligned bookkeeping by the manufacturing and sales divisions.

- Designed a website for the company.
- Provided consultancy on e-commerce management.

## Indian Institute of Technology, Delhi

1 year 3 months

### Masters Researcher

May 2012 - July 2013 (1 year 3 months)

New Delhi Area, India

- Thesis : Stochastic modeling of single-cell gene expression and analytical solutions for the lac operon of Escherichia coli.
- Published results :

- Developed stochastic models for single-cell gene expression noise.
- Reviewed single-molecule imaging studies.
- Performed stochastic simulations of experiments.
- Estimated gene expression noise from data on prokaryotic operons.

### Teaching Assistant

June 2012 - May 2013 (1 year)

New Delhi, Delhi

- Advanced Biochemical Engineering (Fall semester, 2012).
- Microbial Engineering (Spring semester, 2013).

## Biocon

### Biopharmaceutical Production Scale-Up (Intern)

May 2011 - July 2011 (3 months)

Bangalore

- Worked in the R&D division at a cGMP certified facility.
- Interfaced between the Mammalian Cell Culture Group and the Pilot Plant.
- Designed and conducted an experiment to improve bioprocess parameters for bioreactors.
- Explained anomalies in gas transfer hindering scale-up.

## Indian Institute of Technology, Delhi

### Undergraduate Researcher

May 2010 - December 2010 (8 months)

- Worked in a molecular modeling lab.
- Studied molecular interactions between DNA and zinc finger nucleases.
- Helped develop a method for in silico design of nucleases for genome editing.

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## Education

University of California, Davis

Doctor of Philosophy (Ph.D.), Biomedical Engineering with Designated  
Emphasis in Biotechnology · (2014 - 2018)

Indian Institute of Technology, Delhi

B. Tech and M. Tech, Biochemical Engineering & Biotechnology with Minor  
specialization in Nano Science & Engineering · (2008 - 2013)