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Abhilash Dhal

Education

University of California, Davis, CA, USA
MS, Biophysics — ***Sep' 17 - Sep' 19 (Expected)***

Indian Institute of technology(IIT), Varanasi, India
Integrated Dual Degree (B.Tech and M.Tech), Biochemical Engineering, — ***Jul' 11 - Jul' 16***

Relevant Coursework
Algorithm Design, AI and Deep-learning, Advanced Statistics and Probability, Biophysics Techniques, Big Data and High Performance Statistical Computing

Interests

Data science, Algorithm Design, Machine learning and AI, Multivariate analysis and Statistical Modelling, Bayesian Modelling, Integrative Genomics, Bioinformatics

Research Projects

Single step GWAS and QTL analysis method using bayesian modelling and bayesian multiple testing(Research Paper In Progress)
Advisor: Dr. Hao Cheng

- Using a bayesian regression model for application in genome wide association studies(GWAS)
- Devised a novel bayesian inference testing for controlling false positives in GWAS

Tactical decision making agents in starcraft II
Advisor: Dr. Joshua Mccoy — *January'19 - March'19*

- Built 2 reward agents based on CNN acrhitecture and Q-learning algorithms
- CNN performance was evaluated by F-1, precision and recall
- Q-learning performance evaluated over 1000 games for convergence
- Testing against medium and hard scripted AI's for starcraft II

Genomic prediction of commercial chicken traits using JWAS
Advisor: Dr. Hao Cheng — *August'18 - January '19*

- Developed a julia module(XSimPreProcess) for automating Data Simulation and Bayesian Analysis https://github.com/adhal007/SSBR-JWAS-Implementation
- Feature visualization using R with my own smoothing function for a custom visualization plot https://github.com/adhal007/Pheno$_C$orr
- JWAS : Bayesian modelling for single trait analysis of estimated breeding values(EBV's) https://github.com/reworkhow/JWAS.jl
- **Prediction accuracy** for all pairwise traits by pearson's correlation.

Behaviour Recognition of animal activity using Deep learning methods
Advisor: Dr. Ilias Tagopolous — *September'18 - Dec '18*

- Built 5 different neural network classifiers(CNN, CNN-LSTM, RNN, CNN-MLP and MLP) for classifying GPS and remote sensing data
- Grid Search hyper parameter optimization with best F-1 Score of 0.75
- Statistical significance of F-1 scores using Paired t-tests

API for ROSIE Homology modelling enzyme family suite
Advisor: Dr. Justin Siegel — *Jan'18 - March '18*

- Built Controller functions to handle data formats from PostgreSQL server for front end hosting
- Added new protein folding features in the Validator module for user functionality
- Prototyped new application on VM to analyze new protein folding functionality

Computer Skills

Languages: C, C++, Python, Bash, Julia, LaTeX, R, HTML, java

- Machine Learning: Tensorflow, Pandas, PyTorch, SciPy, Keras, Numpy
- Statistical Modelling: JWAS, LinearAlgebra, Distributions
- Web Development and Frameworks: PostgreSQl, SQLite, MongoDB, UCSC Genome Browser, GTEx, 1000 Bulls genome database, Google Cloud Platform(GCP), Turbogears