

education

phd | machine learning

uc berkeley | '17-'22

research: interpretable ml

advisor: bin yu

collaborators:

s. upadhyayula (biology)

a. kornblith (medicine)

bs | cs & math

university of virginia | '14-'17

double major

skills

machine learning

deep learning • pytorch

rule-based models • data cleaning

causal inference • pycharm

experienced

python • java • matlab

proficient

r • c/c++ • web basics

human languages

english • spanish • hindi

awards

berkeley grad slam semifinalist '19, '22

outstanding teaching award '18

uva rader research award '17

uva undergrad symposium winner '17

raven honor society '16-'17

icpc regional qualification '14-'16

1st place microsoft code jam '16

3rd place google games uva '17

2nd place apt puzzle competition '17

funding awards

pdsoros fellowship finalist '19

ircn workshop travel award '19

vidya shelat fund award '16

rodman scholarship '14-'17

experience

berkeley | interpretable ml research (bin yu lab ☺)

fall '17 - present

- developed interpretation methods for ml models (e.g. neural nets)
- developed interpretable models in medicine, biology, and computer vision

paige ai | ai research scientist

summer '21

- interpretable deep learning in digital pathology (especially bladder pathology)

aws | research internship (pietro perona lab ☺)

summer '20

- testing for bias with causal matching using GANs
- interpreting semantic directions in generative models

response4life | volunteer data scientist

spring '20

- helped develop, integrate, and deploy models to forecast covid-19 severity

pacmed ai | interpretable ml internship

summer '19

- developed techniques to interpret machine-learning models for healthcare
- integrated interpretability techniques for predicting icu re-admission

meta | computer vision internship

summer '17

- investigated unsupervised deep learning for segmentation of satellite imagery
- implemented crfs for segmentation post-processing

uva | ml research (yanjun qi lab ☺)

fall '16 – spring '17

- developed novel weighted- ℓ_1 , multi-task gaussian graphical model
- analyzed large-scale functional brain connectivity with graphical models

hhmi | ml research (srini turaga lab ☺)

summer '15, winter '15, summer '16

- extended cnns and watershed algorithms for neural image segmentation
- implemented distributed random forests for image segmentation

uva | comp. neuroscience research (william levy lab ☺)

fall '14 - fall '16

- developed detailed biophysical models of neural computation
- analyzed energy efficiency, noise, and variability in stochastic neurons

hhmi scientific computing | comp. neuroscience research

summer '14

- analyzed backpropagating action potentials via biophysical simulations

research innovations inc. | web dev + android internship

summer '13 - spring '14

- developed web/mobile app for task coordination with qr codes

coursework

computation

machine learning
 computer vision
 structure learning
 algorithms
 artificial intelligence
 deep learning
 learning theory
 ai in graphics
 cs theory
 data structures
 software dev. I & II
 information retrieval
 computer architecture

stat/math

statistical models
 probability
 statistics
 optimization
 linear algebra
 info theory
 real analysis
 linear models
 stochastic processes
 chaos theory I & II
 multivariate calculus
 discrete mathematics
 differential equations
 abstract algebra

neuroscience

neural coding
 neural network models
 neurobiology
 visual neuroscience
 cognitive science

selected publications

interpretable deep learning

- adaptive wavelet distillation from neural networks through interpretations: ha, **cs**, et al. *neurips* '21
- interpretations are useful: penalizing explanations to align neural networks with prior knowledge: rieger, **cs**, murdoch, & yu, *icml* '20
- hierarchical interpretations for neural network predictions: **cs***, murdoch*, & yu, *iclr* '19
- interpretable machine learning: definitions, methods, and applications: murdoch*, **cs***, kumbier, abbasi-asl, & yu, *pnas* '19

interpretable rule-based modeling

- imodels: a python package for interpretable modeling: **cs***, nasseri*, tan, tang, & yu, *journal of open source software* '21 750+ stars
- fast interpretable greedy-tree sums (figs): tan*, **cs***, nasseri, agarwal, & yu *arxiv* '22
- hierarchical shrinkage: improving accuracy and interpretability of tree-based methods: agarwal*, tan*, ronem, **cs**, & yu *icml* '22 (*spotlight*)

real-world data science

- curating a covid-19 data repository and forecasting county-level death counts in the united states: altieri, barter, ..., **cs***, ..., & yu* *harvard data science review* '20
- predictability and stability testing to assess clinical decision instrument performance for children after blunt torso trauma kornblith*, **cs***, et al. *plos digital health*
- interpretable deep learning for accurate molecular partner prediction in clathrin-mediated endocytosis: **cs***, li* et al. *in prep*

applied computer vision

- large scale image segmentation with structured-loss-based deep learning for connectome reconstruction: funke et al. *tpami* '18
- matched sample selection with GANs for mitigating attribute confounding: **cs**, balakrishnan, & perona *cvpr* '21 *civ workshop*

teaching

berkeley | student instructor

summer 2018
 machine learning: cs 189/289
 lectures to class of 80+ students

fall 2019

artificial intelligence: cs 188

mini-projects

notes, blog, & slides '14-'20
 hummingbird tracking '18
 news balancer django app '17
 java mini-games '14-'16

service

basis education volunteering '19-'22
 bair undergrad mentoring '18-'22
 acl rolling reviewer '22
 neurips reviewer '21
 iclr workshop reviewer '21
 cvpr reviewer '21
 aai xai workshop reviewer '21
 neurips ml4h workshop reviewer '20
 computer literacy volunteering '15-'17