

# PRANAV BHARDWAJ

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## EDUCATION

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### Stanford University

*M.S. in Statistics: Data Science*

Expected Graduation:

June 2020

**Key Interests:** Applications of statistics, computational mathematics, machine learning, and software engineering in healthcare and technology

*Coursework:*

**Computational Mathematics:** Linear Algebra, Optimization, Stochastic Processes

**Software Development:** Python, C++, Parallel Computing using MPI, openMP, and CUDA

**Statistics:** Statistical Inference, Linear Models, Data Mining, Causal Inference

**Machine Learning:** Statistical Learning, Machine Learning, Machine Learning with Graphs, Reinforcement Learning, Natural Language Processing with Deep Learning

### University of Illinois at Urbana-Champaign

*B.S. in Mathematics: Operations Research*

Aug 2015 - May 2018

**Minor:** Applied Statistics

**Honors:** Bronze Tablet recipient, Summa Cum Laude, High Distinction from Mathematics Department

## SOFTWARE & TOOLS

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**Proficient Languages:** Python, R, C, C++

**Machine Learning & Modeling:** Python scikit-learn, Python PyTorch, R

**Data Processing & Querying:** SQL, PySpark, R dplyr, Python pandas

**Data Visualization:** R ggplot2, JavaScript d3, Tableau

**Object Oriented Programming:** Python, C++

**Presentation:** HTML, CSS,  $\text{\LaTeX}$ , PowerPoint

## PROJECTS

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### Opioid Safety with VA and FDA

Jul 2019 - Current

*Project Summary:* Assess algorithmic bias in opioid predictive risk model affecting 5.9 million veterans annually

- Reconstruct VA's current predictive model STORM using more recent data from 2016-2018
- Identify risk calibration issues across racial minorities, document issue and suggest diagnostic metrics to the VA administration
- Implement and evaluate additional machine learning algorithms including penalized logistic regression, random forests, gradient boosted trees, and neural networks
- Create interactive data visualizations using d3 for partners to observe trends related to VA facilities, their opioid prescribing practices, and patient health outcomes

### Transferability of Contextual Representations for Question Answering (see website)

Jan 2020 - Current

*Project Summary:* Probe large pretrained contextual language representations (BERT and ALBERT) to gain insights into hierarchical learning process

- Implement neural network probes for natural language processing (NLP) to characterize contextual language representation models
- Open source the trained models, now with over 2000 downloads by NLP practitioners