Deva Kulkarni

✉ drkulkarni236@berkeley.edu   drkulkarni236.github.io   in linkedin.com/in/deva-kulkarni/

Education

Master of Information & Data Science
University of California, Berkeley
GPA: 3.97/4.0 | Jan 2021 - Aug 2023

Master of Science - Mechanical Engineering
University of Illinois, Urbana-Champaign
GPA: 3.95/4.0 | Aug 2015 - Apr 2017

Bachelor of Technology - Mechanical Engineering
Minor - Electrical Engineering
Indian Institute of Technology, Bombay
GPA: 9.16/10.0 | Aug 2011 - Apr 2015

Skills

Python | R | SQL | Git | AWS | GCP | Keras | Tensorflow | Flask | OpenCV | Docker | PySpark | Hadoop | Kafka | Tableau

Coursework

- Natural Language Processing with Deep Learning
- Computer Vision
- Experiments and Causal Inference
- Applied Machine Learning
- Statistics for Data Science
- Fundamentals of Data Engineering
- Research Design
- Programming for Data Science

Publications

- **Investigation of a novel coolant delivery system for titanium machining** - Journal of Manufacturing Science and Engineering, 2018 | Link

- **Fiber optic tapered coupler** (for intraocular illumination during eye surgery) - United States Patent, US11614587B2, 2023 | Link

Other Info

- Languages: English, Hindi, Marathi
- National level medalist in karate

Projects

WindSmart: Wind Turbine Failure Prediction
- Capstone project: Developed an end-to-end anomaly detection system using Gaussian Mixture Models (GMM) for predicting failures in offshore wind turbines.
- Conducted market fit and impact analysis, in collaboration with subject matter experts.
- Built and deployed a user-focused web app on AWS, tailored for wind turbine engineers to facilitate predictive maintenance.

Hate Speech Detection in Hinglish and Korean
- Conducted comparative analysis of transformer-based language models (mBERT and LaBSE) for hate speech detection in Hinglish and Korean social media.
- Conducted error analysis to determine model suitability for specific languages.
- Assessed transfer learning and explored language translation for improved model performance.

Image Classification: Pistachios
- Implemented computer vision methods to classify pistachio images, with a primary emphasis on manual feature extraction through numpy array manipulation.
- Employed dimensionality reduction via PCA and outlier detection using t-SNE.
- Explored multiple machine learning algorithms for model optimization and conducted in-depth analysis of model outputs and errors.

Experiment: Motivating Altruistic Behavior
- Conducted a rigorous randomized field experiment exploring the causal impact of altruistic intent on participants' performance on a puzzle-solving task.
- Developed and implemented the treatment methodology, crafted an online puzzle-solving platform on Qualtrics, and recruited participants via Prolific.
- Employed robust regression modeling in R for comprehensive data analysis.

Regression Analysis: Mask-use and Covid-19 Cases
- Conducted a data-driven investigation into the relationship between mask usage and COVID-19 case numbers across U.S. counties.
- Identified relevant covariates and proposed a causal pathway to the outcome variable.
- Evaluated multiple regression models using R and interpreted the significance of coefficient estimates.
- Assessed the validity of model assumptions and critically analyzed limitations.

Industry Experience

Medical Instrument Development Labs - SF Bay Area, CA   Aug 2017 - Dec 2022
Sr. Research & Development Engineer
- **Research Team Lead:** Led a team of 5 engineers to explore new technologies and innovations for devices used in ophthalmic surgery.
- **Project Management:** Managed high impact projects in collaboration with cross-functional teams: Activities include user research, end-to-end product and process design, interfacing with external suppliers, maintaining regulatory documentation, and transferring products to production.

Key Achievements:
- Spearheaded design and prototyping activities to showcase future device concepts to Bausch and Lomb's global leadership, securing endorsement for groundbreaking projects and solidifying long-term strategic partnership.
- Invented a novel technology for the construction of a device used for intraocular illumination, increasing the illumination intensity by 400%. (patent granted)
- Implemented design improvements to outperform prevailing market standards, surpassing the state-of-the-art cut rate for vitrectomy surgery by 55%. Developed manufacturing procedures, trained assemblers and equipment technicians.