KARM PATEL

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Internships

1. Google Summer of Code (GSoC) - Tensorflow team Apr'22 - Jul'22
- Mentor: Dr. Kevin P. Murphy, Research Scientist at Google in Mountain View.
- Project: Tasks were related to his upcoming textbook 'Probabilistic Machine Learning: Advanced Topics'. in which I had reproduced several figures by converting existing code into **JAX** framework. I had studied and implemented some probabilistic ML algorithms such as Markov Chain Monte Carlo (MCMC) sampling and Variational Inference. Following blog contains more details about my taks.
- Final report: https://karm-patel.github.io/GSoC/

2. Summer Research Internship - IIT Gandhinagar May'21 - Jul'21
- Mentor: Prof. Nipun Batra
- Project: I had worked on research project titled "Samachar: Print News Media on Air Pollution". We scraped around 17.4K air pollution related articles from the archives of The Times of India and The Hindu using python's libraries. Then we applied exploratory data analysis and topic modeling to reveal the news media response to air pollution. This work (PDF) is accepted in ACM COMPASS conference.
- Github: github.com/karm-patel/Samachar-News-media-on-air-pollution

Education

M.Tech, Computer Science, *July 2022 - current*
CGPA: 9.0/10.0
IISc Bangalore, Karnataka, India.

B.E., Computer Engineering, *Jun 2018 - May 2022*
CGPA: 9.74/10.0
Vishwakarma Government Engineering College, Ahmedabad, Gujarat, India

Higher Secondary School, *Jun 2016 - Apr 2018*
Percentage: 85.3% (PCM)
S.S. Divine High School (GSEB Board), Ahmedabad, Gujarat, India

Publications (Google Scholar profile)

1. **Samachar: Print News Media on Air Pollution in India** [PDF]
Karm Patel, *Rishiraj Adhikary, Zeel B Patel, Nipun Batra, Sarath Guttikunda. In ACM SIGCAS/SIGCHI Conference on Computing and Sustainable Societies (COMPASS) (COMPASS '22)*

Projects

1. Attendance System using Face Recognition [Github] ***Python, Flask, SQL*** | *Jun 2020*
Web: Flask-based web application that provides functionalities such as taking attendance using face recognition, downloading attendance, adding lectures.

Face recognition: In this blog, I implemented face recognition part ans shows the results. I have used the **Caffe** model to detect a face, the **FaceNet** model to get face embeddings and the **SVM** model to classify faces.

Database: I have used local MySQL database to store attendance records of students.

2. Vaccine Slot Notifier [Github] ***Python, Flask, AWS EC2*** | *Mar 2020*
I made this application to help people to get notification of COVID vaccine slot when slot is available on cowin portal. More than **200 people** registered on this website.

Web: I deployed a Live Web application (using flask) on AWS EC2 instance which collects the necessary details of a user and notifies him/her via email when a vaccine slot is available in his/her area.

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Web scrapper: I made Web-Scrapper using **requests** and a **beautiful soap** python's libraries which continuously scrape data from the cowin portal.

MAJOR OPEN SOURCE CONTRIBUTIONS

1. **blackjax:** Added demo notebook which illustrate change of variable technique from scratch in Hamiltonian Monte Carlo (HMC) algorithm.
   github.com/blackjax-devs/blackjax/pull/254
2. **pyro:** Added argument in existing method which enables to render parameters in the graphical probabilistic models.
   github.com/pyro-ppl/pyro/pull/3039
   github.com/pyro-ppl/pyro/issues/3023
3. **numpyro:**
   (a) Added __repr__ methods of various constraints which made representation of objects readable.
   github.com/pyro-ppl/numpyro/pull/1375
   (b) Enabled rendering params in probablistic graphical models (similar contribution to pyro)
   github.com/pyro-ppl/numpyro/pull/1381
4. **pymc:** Added moment and test for ExGaussian distribution.
   github.com/pymc-devs/pymc/pull/5165

COURSES

1. **IISc** [M.Tech]
   (a) Applied Linear Algebra and Optimization
   (b) Probability and Statistics
   (c) Computer Architecture
   (d) Design Analysis of Algorithms
2. **Coursera** [B.E.]
   (a) ML by Andrew NG
   (b) Neural Networks and Deep Learning by Deeplearning.ai
   (c) Introduction to Data Science in Python by University of Michigan

CONFERENCE/TALKS

1. **ACM COMPASS'22:** I presented my paper 'Samachar' in the ACM COMPASS conference. *Virtual | 1 JUL 2022*
2. **Air Sensors International Conference (ASIC):** I gave a 4 minute lightning talk about my work related to 'Samachar' paper. *In person | 26 AUG 2022*

ACHIEVEMENTS

- AIR 128, GATE 2022.
- Team Leader in the project of state Hackathon, 2019 and build hostel management system.
- 3rd rank in A.R. RAO Mathematics state olympiad, Gujarat, 2018.

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