Pratulya Bubna

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EDUCATION

University of Southern California (USC) — Los Angeles, CA
M.S. in Computer Science (3.86/4.00) — *Aug. 2019 — Dec. 2021*
Coursework: Algorithms, Artificial Intelligence, NLP, Operating Systems, Data Mining

Guru Gobind Singh Indraprastha University — Delhi, India
B.Tech. in Information Technology (81.51%, First Class with Distinction) — *2014 — 2018*

SKILLS

Languages Python, C, C++, Javascript, Bash, HTML, CSS

Libraries PyTorch, Keras, NumPy, Scikit-learn, OpenCV, Django, pthread, PySpark

Others UNIX/Linux, Jupyter, Knowledge Graphs, Docker, MapReduce

EXPERIENCE (link in title)

Mercedes-Benz Research & Development — Bangalore, India
Research Intern | Intelligent Interiors (Cars) — *Jun. 2020 — Dec. 2020*
- Researched in "Deep Learning for 3D Point Clouds", experimenting with and implementing papers on 3D tasks — mesh reconstruction, surface normal estimation, part segmentation, 3D object classification — primarily involving Graph Networks (GCNs/GNNs) based architectures (eg. DGCNN) *[Blog]*
- Briefly worked on generating synthetic data for 2D human pose estimation using Blender software (python scripting API) and humanoids (MakeHuman)

USC Information Sciences Institute — Los Angeles, CA
Graduate Research Assistant | AI Division | Center on Knowledge Graphs — *Oct. 2019 — May 2020*
- Worked with ML and GIS tools to develop an unsupervised framework that extracts geographical features (eg. railroads, wetlands) from scanned historical maps and links them over time and space using knowledge graphs *[Website]*
- Trained UNet, PSPNet, DeepLabV3 (with different backbone networks) to segment the railroad features
- Denoised the vector data (eg. railroads) from the segmentation masks using cluster analysis as post-processing *[Github]*

Coding Blocks — New Delhi, India
Course Instructor, Mentor — *Jun. 2018 — Jul. 2019*
- Trained students and working professionals on Machine Learning and Server-Side Programming with Python
- Notable Concepts: Image Captioning, GANs, OpenAI Gym, Text Generation with LSTMs, Style Transfer. *[Github]*

SELECT PROJECTS (link in title)

Weenix Operating System — *Feb. 2021 — May 2021*
Operating Systems | CSCI 402 *[Github]*
- Developed an OS in C (based on V6 Unix) that supports processes, threads, virtual file system, S5FS and virtual memory

Data Mining with Spark — *May 2021 — Jun. 2021*
- As part of coursework, implemented data mining algorithms using PySpark utilizing MapReduce paradigm *[Github]*
- Recommender Systems (content/collaborative filtering), Frequent Itemsets (SON algorithm), Graphs (BFR clustering)

Network Traffic Shaper using Token Bucket Filter — *Jan. 2021 — Feb. 2021*
- Developed a multithreaded token bucket filter simulation using pthread library in C *[Github]*

Placement Cell Web Portal — *Aug. 2016 — Aug. 2018*
Self-Initiated Project | Team Head | Full-Stack Developer | Server Admin *[Github]*
- Built a centralized portal to digitize and streamline the placement activities of over **120+ colleges** affiliated to GGSIPU.
- Ported the laborious offline clerical work to the semi-automated online system.
- The portal facilitated interaction among **630+ students** and **30+ recruiters**, for the 2018 career session of my college.