Pratiksha Pai

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ABOUT ME

- I'm a 2nd year Master's **Computer Engineering** student at **Georgia Tech**.   **(Aug'22-Present)**
- I'm working as **Graduate Research Assistant** at Neuroloops lab with **Prof. Celikel Tansu**.   **(Aug'22-Present)**
- Recently, I interned as a **Engineering Development Engineer** at **Mathworks**, Natick, US.   **(June'23-Aug'23)**
- Previously, I was a **Senior Software Engineer** *(Jan'21-Aug'22)* and **Software Engineer** *(June'19-Dec'20)* at **Infoworks.io**, Bangalore, India.   **(June'19-Aug'22)**

EDUCATION

Georgia Institute of Technology, Atlanta, GA   CGPA: 4.0/4.0
Masters Electrical and Computer Engineering (Computer Systems and Software)   Aug 2022 - May 2024 (expected)

NIT Karnataka (NITK), India   CGPA: 4.0/4.0
Bachelors Electrical Engineering (Minor in Computer Engineering)   Aug 2015 - May 2019

TECHNICAL SKILLS

- **Programming Languages**: Python, C++, Go, JavaScript, SQL, HTML/CSS, Bash
- **Tools & Platforms**: AWS, Azure, GCP, Docker, Kubernetes, Terraform, Ansible, Jenkins, Git, MongoDB, MySQL, Postgres
- **Frameworks & Libraries**: MPI, PyTorch, DeepLabCut, MediaPipe, Pandas, NumPy, Scipy, TensorFlow, scikit-learn, Flask
- **Development Methodologies**: Agile, DevOps, CI/CD
- **Relevant Courses**: Advanced Programming Techniques, High-Performance Computing, Computer Networks, Computer Vision, Generative Deep Learning, Neural Networks, Statistical Machine Learning, Advanced Digital Signal Processing

PROFESSIONAL EXPERIENCE

Mathworks   *Natick, US*
Software Intern, *Engineering Development Group*   *June 2023 - August 2023*

Cloud Install Manager - Development & Automation | Go, Docker, Perforce, DevOps, Agile
- Led multi-team effort for Cloud Install Manager, automating workflows, cutting setup time from 3+ hours to 90 seconds
- Implemented a parallel execution engine for 17+ Docker images utilising Go's concurrency, reducing build time by 70%

Infoworks.io   *Bangalore, India*
Senior Software Engineer, *Infoworks Platform*   *Jan 2021 - Aug 2022*

Received the Be The CEO award in 2021 for India Engineering amongst 200 developers for exceptional ownership

Horizontal Pod Autoscaling for MongoDB | Kubernetes, Helm, GCR, MongoDB, Bash, Git Actions, ArgoCD
- Led Kubernetes containerization effort for MongoDB, including configuration, seeding, setup, deployment, & tests
- Implemented & performance tested MongoDB's transition to replicaset loadbalancer from standlone, in production
- Interfaced MongoDB replicaset with the 4+ core services, reducing max failover time & replication latency
- Utilized Github actions, Helm, GCR, ArgoCD for a highly standardized and efficient deployment process

Python Framework for installs & upgrades | Python, Taskflow Graph, Linux, Bash, Mongo, Mongo Atlas
- Developed a cross-platform Python Taskflow framework for installation & upgrades to meet customer specifications
- Wrote functionalities to perform prereq check, setup & index MongoDB, seed data, handle configuration, cleanup, etc
- Migrated & verified 2.6 million MongoDB documents & a 200+ GB MongoDB Atlas transition using Python & Bash
- Created a comprehensive test framework for 30+ system critical checks ensuring data integrity during transitions

Infoworks.io   *Bangalore, India*
Software Engineer, *Infoworks Platform*   *June 2019 - Dec 2020*

Received yearly Spot awards for the years 2019 & 2020, for developing key features and excellent teamwork

Cloud Automation & Optimization | Jenkins, Cloud Infrastructure Tools, AWS/Azure/GCP CLIs, Airflow
- Wrote Jenkins & Drone CI/CD pipelines using Terraform, Ansible automating builds & enabling weekly updates
- Wrote AWS AMI-based backup & CloudWatch, Lambda, Prometheus based monitoring for production systems
- Authored auto-shutdown scripts for AWS EC2, Azure, and GCP instances to cut company-wide cloud costs by 35%
- Designed Apache Airflow test suites, uncovering 20+ system-critical and 120+ routine bugs in the MVP

Monitoring and Alerting Infrastructure | Prometheus, Grafana, Lambda, Slack, AWS
- Engineered monitoring systems via Prometheus and Grafana, overseeing 50+ nodes to ensure timely Slack alerts
- Wrote AWS Lambda functions for application performance monitoring & automating AWS-AMI snapshot creation
- Authored detailed on-call playbooks for multi-timezone incident management, detailing precise resolution steps

RESEARCH PROJECTS

Georgia Institute of Technology   *Atlanta, US*
Graduate Research Assistant, *Part-time*   *Aug 2022 - Present*

Open-Source Real-Time Human Motion Tracking Dataset | Python, OpenCV, Deeplabcut | Dataset | Github
- Annotated & open-sourced a dataset of 100+ videos, 5000+ frames for sensorimotor tasks using OpenCV, DeepLabCut
- Fine-tuned DeepLabCut for real-time human motion tracking, beyond its initial animal tracking use

Open-Source Sensorimotor Kit | CV2, Mediapipe, OpenBCI, PyQt5 | Github
- Designed and open-sourced the Sensorimotor Kit in Python, enabling recording and analysis of sensorimotor inputs
- Enhanced video capture to 120+ FPS WUXGA using OpenCV & executed human motion tracking with Mediapipe
- Integrated EEG, EMG, and hand tracking into the kit for real-time behavioral tracking and analytics using OpenBCI
- Integrated GUI components with PyQt5 providing easy-to-use interface enabling 100+ academic experiments
- Successfully submitted Sensorimotor Kit to IEEE Brain for enhancing research capabilities in neuroscience

ACADEMIC PROJECTS

Georgia Institute of Technology   *Atlanta, US*
Course Projects   *Aug 2022 - Present*

Finetuning LLaMA2 on Python Code Dataset | Pytorch, Hugging Face | GitHub
- Finetuned the LLaMA2 7B model on a Python codebase to enable local interfacing using HuggingFace & Pytorch
- Implemented QLoRA for parameter efficient finetuning to work on a single 32GB NVIDIA A100

Implementing Generative AI models for MNIST dataset | Pytorch, Scipy, Numpy, Pandas | GitHub
- Implemented autoregressive models like NADE, MADE, NICE, and VAE for generating MNIST-like data in Pytorch
- Tweaked and tested models like EM, GAN, EBMs, Score base diffusion models for generating MNIST-like data
- Performed an in-depth comparison of these generative models for their efficiency, accuracy, and quality of outputs

Models evaluating sentence similarity among paraphrases using BERT | Pytorch, HuggingFace | GitHub
- Fine-tuned BERT model for early sentence interaction in paraphrase detection on the MRPC and TaPaCo datasets
- Implemented functions to balance the corpus to mitigate bias & overfitting, benchmarked performance of the models

High Performance Computing | C++, OpenMPI, Python, Sockets | GitHub
- Achieved 4x speedup in quicksort and Jacobi iteration via parallel algorithms using MPI in C++, tested via Python
- Wrote efficient data partitioning techniques to reduce time and storage complexity from $O(n^3)$ to $O(n^2)$ in MPI

HACKATHONS AND AWARDS

Georgia Institute of Technology   *Atlanta, US*
Hackathons   *Oct 2023 - Dec 2023*

Chrome extension for website interaction | JavaScript, Claude v1 API, HTML, CSS | GitHub | Demo | Devpost
- Built a Chrome extension using JavaScript to scrape a website and get relevant information via Claude API in 36 hours
- Implemented highlighting relevant content and AI-assisted live chat feature for easy interaction with websites
- Enabled seamless browsing through SEO optimized websites to win the best companion tool at AI ATL hackathon

Personalised journaling iOS app | Swift, Langchain, Firebase, Flask, Heroku, Python | GitHub | Demo | Devpost
- Developed a personalized journaling iOS app using Swift UI with personalized prompts using Langchain in 36 hours
- Used Flask for robust backend app, Firebase for authentication & database management, Heroku for hosting
- Added social features like adding friends, maintaining streaks, winning best mental health app at HackGT

VOLUNTEERING

- Led beach clean-up initiatives; recycled collected plastic into keychains, funding further environmental efforts
- Helped underprivileged high school students with Math and Science in association with NITK beach school
- Facilitated job search for 200+ students & coordinated with 50+ companies via NITK Career Development Centre