Pratyush Kumar

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Education

The Pennsylvania State University - University Park, PA   Aug 2025 - May 2027
Master of Science (MS), Computer Science

Vellore Institute of Technology - Vellore, India   Jul 2019 - May 2023
Bachelor of Technology (B.Tech) , Computer Science and Engineering

Experience

Graduate Learning Assistant   Aug 2025 – Dec 2025
- Mentored **38** students in C++ and MATLAB debugging, resulting in a **25%** increase in average assignment grades
- **Enhanced** students' algorithmic proficiency and programming concepts by facilitating weekly lab sessions and providing real-time debugging support

Software Engineer
Enphase Energy – Bangalore, India   Jan 2023 – Jul 2025
- Developed role-based backend features for Enlighten **(5,000+ DAUs)**, ensuring reliable CRUD operations and data consistency across hybrid **MySQL/MongoDB** cloud-based web services
- Maintained **customer reliability** by refactoring legacy APIs to support international standards, achieving **zero-downtime rollouts** for business & product expansion in European and LATAM markets
- **Received 'Employee of the Month' Award** for delivering the EU compliance rollout ahead of schedule and driving the adoption of Selenium-based automated QA frameworks
- Mentored **four junior engineers** by designing custom onboarding labs (reducing ramp-up by **65%**), resulting in minimal critical bugs in their initial code contributions
- Integrated **Jenkins CI/CD** pipelines into automation frameworks, improving deployment efficiency by **70%** and reducing manual regression testing time by **30%**
- Engineered a TestRail reporting tool in **Python**, reducing analysis of test cycle results by **90%+** (1hour -> 5 mins)

Software Intern
Acies Consulting LLP, Mumbai, India   Aug 2021 – Jan 2022
- Developed the backend logic for database connectors of a Data Management platform **(Django)**, enabling users to visually configure **PostgreSQL, Redis, JSON, XML** schemas, reducing manual SQL migration time by **75%**
- Refactored JavaScript code using **jQuery/AJAX** to induce asynchrony in a No-Code Workflow Manager, **reducing setup time from 3 days to 30 minutes**

Projects

Distributed MapReduce Compute Framework
- Architected a text-processing engine (MapReduce-style) that **scaled linearly** across EC2 nodes, improving throughput by **7x** and enabling fault-tolerant recovery
- Engineered the system to handle **EC2 instance crashes** using a master-node heartbeat monitor to detect failures and re-assign tasks instantly preventing data loss **(C++, gRPC, AWS EC2, Git, Linux)**

InstructBLIP Optimization for Image Captioning
- Enhanced low-resource image captioning by boosting **Vicuna-7B**'s model accuracy **8x**, solving repetition issues for edge devices using custom decoding logic
- Boosted captioning accuracy **(CIDEr) from 12.1 to 94.7**, outperforming standard baselines using the Flickr8k dataset and A100 GPUs **(PyTorch, LoRA, TensorFlow)**

Next.js Component-Based Portfolio
- **Optimized** performance of a Vercel deployed web platform (**Next.js, TypeScript),** achieving **95+ Google Lighthouse score** through Server-Side Rendering (SSR)
- **Reduced CLS by 40%** by implementing hydration-safe animation strategies and pre-computed layout boundaries, enhancing SEO and user experience