

# PALASH THAKUR

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## OBJECTIVE

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Senior Software Engineer with a focus on healthcare applications of AI, NLP, and backend engineering, aiming to contribute to research in predictive healthcare modeling and treatment optimization.

## EDUCATION

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**Shri Ramdeobaba College of Engineering and Management**, Nagpur, India

*Aug 2018 – May 2022*

Bachelor of Engineering in Electronics Engineering

CGPA: **9.30/10.00**

Minor in Computer Science and Engineering

SGPA: **9.00/10.00**

**IELTS Academic:** Overall Band Score **7.5**

*Sep 2024*

## HONORS AND ACHIEVEMENTS

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- **Winner of Google Cloud Hackathon:** Secured first place in the [Google Cloud Hackathon](#). Invited to Google's office to record a winning video, which has garnered over 7,800 views on [YouTube](#).
- **Google Cloud APAC:** Presented as a young developer for the [HumBanayenge event](#) hosted by Google Cloud India.
- **Best Paper Award at ICESC-2020:** Awarded for the paper based on graduation thesis on traffic sign detection for driverless cars.

## RESEARCH INTERESTS

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- Application of Natural Language Processing (NLP) and Large Language Models (LLMs) to interpret unstructured medical data and enhance predictive healthcare modeling.
- Adaptive AI-driven treatment design for multiple medical conditions, improving clinical trial outcomes and patient care.
- Integration of an explainable AI (XAI) with Agentic AI-based diagnostics assist solution to help clinicians.

## MENTORSHIP AND TEACHING EXPERIENCE

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- **Mentor and Contributor, Google Cloud Developer Community:** Assisted in promoting events and workshops on AI and cloud computing as a part of Google Cloud's young developer program. Addressed **8K+ students** in tech events through social media platforms.
- **Mentor, Persistent Systems Onboarding Program:** Actively mentored new joiners, providing technical guidance and onboarding assistance in backend engineering and data science projects.
- **Mentor and Co-Guide, Shri Ramdeobaba College of Engineering and Management:** Provided mentorship and guidance to **200+ undergraduate students** in research projects, particularly in AI and data science fields, and assisted them in preparing for job placements by conducting mock interviews, technical training, and career advice sessions.

## SKILLS

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### Technical Skills

Python, Streamlit, FastAPI, Pytest, Unittesting, AJAX, RESTful API integration, GraphQL, SQLAlchemy, PostgreSQL, MongoDB, Redis, Docker, AWS (Lambda, S3, EC2, RDS), CI/CD (Jenkins, GitLab CI), Nginx, Git, Kubernetes, Elasticsearch, React JS, HTML5, CSS3, Machine Learning, Deep Learning, NLP, langchain, LLMs, JIRA, Github actions

## Soft Skills

Team Player, Good Communication, Personal Branding, Critical Thinking, Analytical Thinking, Problem-Solving, Adaptability, Presentation Skills, Ethical Mindset, Time Management

## PROFESSIONAL EXPERIENCE

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### Senior Software Engineer

May 2024 – Present

Persistent Systems Ltd., Maharashtra, India

#### Client: Intuit, Bangalore

- Led a team of **3 associate engineers** to develop and maintain backend services for **QuickBooks Finance Agent** used by **1M+ customers**.
- Worked on enabling Agentic AI capabilities for QBO Advanced and Plus users.
- Designed and implemented Python-based REST APIs for generating Word-formatted business insights using financial data.
- Developed robust PostgreSQL integration and implemented load testing strategies to ensure high availability and performance at scale.
- Managed AWS-based deployment pipelines, and led PostgreSQL scaling efforts to meet the demands of QuickBooks Online Advanced users.
- Collaborated with cross-functional teams to ensure seamless integration of the Finance Agent into QuickBooks Plus & Advanced platforms.
- Added pagination plus response & DB caching; JMeter tests doubled throughput and cut P95 latency by 36%.
- Optimised core **REST** APIs, trimming average response time by 66% for 1M+ QuickBooks Pro users.
- Built a reusable “Insights” widget and template engine now driving personalised dashboards for millions.
- Delivered scalable **FastAPI** services linking a **React** UI to **LLM** endpoints for the AI-Assist chatbot (~10k calls/hr).
- Pushed **unittest** + **Pytest** coverage to 99%, cutting post-release bugs by over 70%.
- Co-designed a new metric to score **LangChain** answers vs. ground truth, slashing evaluation time from days to hours.
- Streamlined CI/CD with **Jenkins** and **GitHub Actions**, shrinking release lead-time from 2 h to 15 min.
- Built a **Streamlit** analytics app and embedded it in React via **stlite** to enrich the AI-Assist visuals.

### Software Engineer

May 2023 – April 2024

Persistent Systems Ltd., Maharashtra, India

#### Client: Connexus HIE, Central Texas

- Spearheaded **PostgreSQL query optimization**, achieving an average of **40% improvement** over original query performance.
- Acted as the **Database Administrator (DBA)**, managing the database through **pgAdmin**, ensuring seamless operations and efficient query handling.
- Collaborated in developing **AWS HealthLake**, contributing to the design, implementation, and optimization of cloud-based health data solutions.

### Associate Data Scientist

June 2022 – April 2023

Persistent Systems Ltd., Maharashtra, India

#### Client: Harvard Medical School, Boston

- Developed a robust **Natural Language Processing (NLP) pipeline** for extracting pivotal information from **Electronic Medical Record (EMR) data**.
- Standardized medical terminology through the **UMLS REST API**, ensuring accuracy with effective exception handling.
- Created a comprehensive concepts and facts file derived from the **NLP output** for analyzing **population-level health data**.
- Conducted an in-depth hypothesis study on the impact of **diabetic medicines** on **Indian patients**, contributing to future medical research.

- Pioneered the development of **machine learning components** for the **I2B2 platform**, assuring model performance for accuracy and reliability.

## Research Intern

December 2021 – June 2022

Persistent Systems Ltd., Maharashtra, India

## CTO Team Projects, Pune

- Conceived and developed an **image enhancement solution** for cleaning **fluorescent microscopic images**, leveraging advanced **digital image processing techniques**.
- Addressed challenges in **liquid biopsy** by harnessing **machine learning** and **deep learning methodologies**.
- Orchestrated an integrated **dashboard** for **survival analysis** of **breast cancer patients**.
- Researched and developed **image generative models (GANs)** for prospective clients.
- **Led a team of four** in a hackathon, achieving a spot among the **top eight** teams.
- Completed **GEMS training** in **Python Developer** and **React JS Developer** with an **A+ grade**.

## RESEARCH PROJECTS

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### Research Internship: Detection and Classification of Traffic Signs for Driverless Cars

2020

- Created two-stage architecture with a detection algorithm used to detect traffic signs followed by a classification algorithm which classifies detected traffic signs into 43 categories.
- A Canny edge detector is used to detect the edges of the localized traffic sign and to draw shape-based boundaries around traffic signs.
- **Outcome:** Published paper awarded Best Paper at ICESC-2020 (see Academic Publications).

### Research Project: Audio and Text-Based Emotion Recognition System Using Deep Learning

2023

- Developed and implemented audio- and text-based emotion recognition algorithms using the MELD dataset, achieving a weighted average F1-score of 70% with a combined Audio + Text-based model.
- Conducted research on emotion comprehension in AI, leveraging NLP techniques to mine opinions from conversational data and demonstrating superior performance of multimodal emotion recognition models.
- **Outcome:** Research published in ICMEET-2023 proceedings (see Academic Publications).

### PathologyGAN and TimeGAN

2022 – 2023, Persistent Systems

- Developed a GAN-based model to generate high-quality H&E stained breast cancer images.
- Leveraged the latent space for interpretable structures, enabling semantic vector operations that translate into tissue feature transformations.
- Validation by two expert pathologists confirmed no significant difference between the generated and real images.

### H&E Image Cleaner Tool

2022 – 2023, Persistent Systems

- Created a multi-threaded solution to automate the cleaning of H&E stained pathology microscopic images.
- Reduced manual processing time from 8 minutes to just 25 seconds, significantly improving workflow efficiency in pathology labs.

### Early Cancer Detection using AI

2022 – 2023, Persistent Systems

- Built a prototype for early cancer detection on the Google Cloud Platform using Vertex AI and Python 3.
- Focused on enhancing diagnostic accuracy and model optimization, reducing diagnostic turnaround time from one week to just 5 seconds.

## ACADEMIC PUBLICATIONS

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- Palash P. Thakur, Sharayu R. Choudhari, Vikas R. Gupta (2020). [“Detection and Classification of Traffic Signs for Driverless Cars.”](#) *BioScience Biotechnology Research Communications*, Special Issue Vol 13 No 14, pp. 517-521. **Awarded Best Paper at ICESC-2020.**

- Palash Thakur, Ronit Shahu, Vikas Gupta (2023). “[Audio and Text-Based Emotion Recognition System Using Deep Learning](#).” Published in *7th International Conference on Micro-Electronics, Electromagnetics and Telecommunications (ICMEET-2023)*, Springer Link, LNEE, volume 992, pp. 447–459.

## OPEN-SOURCE CONTRIBUTIONS

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### UMLS Python Client

Published: *September 2024*

#### *Personal Project*

- Developed and published an open-source **Python package** [umls-python-client](#) offering comprehensive access to **UMLS REST APIs**, simplifying interactions with healthcare data for developers and researchers.
- The project was officially published on the **UMLS Community page** by the **National Library of Medicine (NLM)** ([NLM UMLS Community](#)).
- Designed the tool with **modularity** and **flexibility**, providing control over result formatting and enabling seamless integration into various workflows.
- **Project Links:** [GitHub Repository](#) — [Documentation](#)

## PRESENTATIONS

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- Palash P. Thakur (2020). “Early Prediction of Sepsis from Clinical Data Using Classification Trees and Boosting Algorithms.” Presented at the National Conference on Advances in Engineering, Technology, and Applied Sciences (Spandan 2020), Yeshwantrao Chavan College of Engineering, Nagpur. **Awarded Best Paper.**
- Palash Thakur, Santosh Dixit, Keerthi Harikrishnan (2022). “Zacharist - Microscopic Image Enhancement Using Advanced Computer Vision.” Presented at Semicolons at Persistent Systems Limited. **In Top 8 among 32 teams.**
- Palash Thakur, Santosh Dixit, Keerthi Harikrishnan, Amogh Tarcar (2022). “Leveraging Google Cloud for Early Detection of Cancer Cells Using AI.” Presented at Google Cloud Next Big Thing 2022 Hackathon; **First Place among over 300 teams.**
- Palash Thakur, Kavishwar Waghlikar, Shreekanth Joshi (2022). “Integration of Unstructured Medical Records of Diabetic Patients into a Standardized Format Using UMLS for I2B2.” Presented at Project Zou (Data Diabetes Discussion).
- Palash Thakur (2023). “DataBridge - AI-powered data standardization tool for I2B2.” Presented at Persistent Systems Hackathon. **2nd Runner Up.**

## LEADERSHIP

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- Currently leading a team of 3 junior engineers for Intuit Quickbooks Advanced development.
- Led a team of 3 senior members in GCP Hackathon.
- Led a team of 4 members in Semicolons Finals, achieving top 8 placement.
- Winner of the internal hackathon at Persistent Systems.
- Actively involved in mentoring new joiners at Persistent Systems, recognized for outstanding contributions and leadership in technical projects.

## ADDITIONAL COURSES

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- **Databricks:** Professional Certificate in Large Language Models
- **CITI Program:** Data or Specimens Only Research
- **Microsoft Certified:** Azure Fundamentals
- **University of Michigan (Coursera):** Applied Data Science with Python
- **edX MITx:** Probability - The Science of Uncertainty and Data
- **Coursera (IBM):** AI Engineering
- **Department of AI, IIT Hyderabad:** Deep Learning for Computer Vision