Pratishtha Sharma

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SUMMARY

Software developer (MSc Software Engineering, Dec 2025) who builds and ships data-driven applications end-to-end requirements to implementation to QA. I've developed C# systems in Unity, built APIs and full-stack apps using Node and Express, and created Python pipelines to clean and analyze real-world time-series data. Across research and product work, I'm known for learning new stacks quickly, debugging edge cases, and communicating results clearly through metrics and concise reports.

SKILLS

Languages: Python, SQL, C++, C#, Dart, Object Oriented Programming, Data Structures and Algorithms
Data/ML: pandas, pytest, NumPy, scikit-learn, matplotlib, seaborn, feature engineering, model evaluation, time-series analysis
Data Systems: ETL, data validation, BigQuery, Firebase, MongoDB, Big Data(Hadoop, Hive, Pig), Docker
Tools: Git/GitHub, Jira, Confluence, Jupyter, VS Code, Postman, MS Suite, LaTeX, Flutter, Unity, ChatGPT, Gemini

EXPERIENCE

Research Assistant — ETHEREAL Research Lab, University of Calgary   Calgary, AB
Graduate Researcher (Analytics + Data Pipelines + Extended Reality)   *Sep 2023 – Dec 2025*
- Built and maintained the data workflow behind *HapTechBoard*, an AR communication app on HoloLens 2, so each study session produced reliable, analysis-ready logs.
- Designed a dataset structure for real user sessions and processed **300k+ 3D frames** of hand-tracking and interaction events into curated datasets with validation checks and reproducible scripts.
- Developed Python pipelines for cleaning, alignment, and feature extraction (distance, direction, motion cues), then defined clear metrics and plots to evaluate model behavior and failure cases.
- Implemented and evaluated intent-inference scoring methods to recover intended selections when taps were missed, and summarized results with practical takeaways that informed the next iteration.
- Supported pilot-to-final user studies: kept protocols and data organized, debugged edge cases, and communicated findings to both technical and non-technical stakeholders.

Teaching Assistant — University of Calgary   Calgary, AB
Big Data Analytics; Software Performance Evaluation; Software Design   *Sep 2023 – Dec 2025*
- Supported analytics labs end-to-end: ingestion, ETL-style transformations, validation checks, SQL querying, and turning outputs into clear conclusions.
- Supported containerized lab environments (Docker) for Big Data tooling and helped students troubleshoot setup and runtime issues.
- Helped students debug Spark/Hadoop workflows and reason about correctness vs. performance trade-offs.
- Assisted with environment setup (Git, IDEs, databases) and guided teams under deadlines with practical debugging support.

Mitacs Globalink Research Intern — Athabasca University   Remote/Hybrid
Data-Backed Product Development (Flutter/Firebase + Structured Data)   *May 2022 – Dec 2022*
- Built features for a cross-platform app using structured trip datasets; handled edge cases and validation so content stayed consistent across devices.
- Worked with geospatial content authored in QGIS and implemented user-facing flows that presented location-based information clearly.

Research Intern — Utrecht University (Debye Institute for Nanomaterials Science)   Netherlands
Python Data Preparation + ML Analysis (XANES)   *Aug 2021 – Dec 2021*
- Built repeatable Python workflows for dataset organization, preprocessing, and exploratory analysis, with documentation to keep runs traceable.
- Implemented baseline ML comparisons (Decision Trees vs Random Forests) and summarized results with concise plots/tables for quick stakeholder review.

PROJECTS

HapTechBoard — AR Letterboard + Shared Experience (Unity/C#, MRTK3, OpenXR, Vuforia)

- Built an AR letterboard system for HoloLens 2 and implemented structured logging so interactions could be replayed, analyzed, and debugged after each session.
- Implemented a shared experience where a communication partner and user see the same aligned board using image tracking, enabling guided spelling practice in a synchronized AR view.
- Owned core interaction workflows end-to-end: input handling, UI feedback, and stability fixes based on observed failure cases during pilot sessions.
- Iterated through pilot study sessions by debugging edge cases and validating key flows (alignment, interaction, logging) to improve usability and reliability over time.
- Conducted a user study to evaluate usability and practicality of the multiplayer application and summarized results as clear takeaways for next-step improvements.

SAGE — Intent Inference from Hand-Tracking Time-Series (Python)

- Built an intent-inference pipeline that predicts which letter a user meant to select on an AR letterboard, even when the headset misses the tap (recovered ~70% of missed events in evaluation).
- Cleaned and aligned noisy time-series hand-tracking data with interaction logs, then engineered motion + geometry features (distance, direction, velocity cues, Gaussian-based likelihood) for scoring.
- Designed a Bayesian-style scoring method that ranks likely targets and makes failures explainable; validated outputs with video coding and targeted error analysis.

Health Predictor — ML Model to Mobile App (Python, scikit-learn, Flask API + Flutter/Firebase)

- Built a full pipeline from dataset to app: cleaned data, engineered features, trained and compared models (Logistic Regression, Decision Trees) for stroke and diabetes risk prediction tasks.
- Served the best-performing Logistic Regression model (accuracy > 90%) behind a Flask API and integrated it into a Flutter app for real-time predictions from form inputs.
- Added input validation and end-to-end testing across the mobile UI, API layer, and Firebase to keep outputs consistent and reliable.

PASSit — Campus Social Platform (MongoDB/Express/React/Node)

- Built a community web platform with accounts, profiles, posts, and likes, designed around real user flows.
- Designed MongoDB schemas and REST APIs for authentication and content, and connected them to a responsive React frontend.
- Tested end-to-end behavior across UI/API/database, including permissions and edge cases, and produced a report following software engineering practices.

EDUCATION

University of Calgary   Calgary, AB
MSc, Software Engineering (Thesis) | CGPA: 4.00/4.00   *Sep 2023 – Dec 2025*
- Thesis: *Enhancing AR Letterboards for Nonspeaking Autistic People via Haptic Feedback and Intent Inference.*
- Coursework: Data Mining & Machine Learning, Image Analysis, Dependability & Reliability of Software Systems, Virtual Agents/Avatars & Extended Reality.

Banasthali Vidyapith   Rajasthan, India
BTech, Computer Science Engineering | CGPA: 9.23/10   *Jul 2019 – Jun 2023*

PUBLICATIONS & LEADERSHIP

- **CHI EA '24** (Extended Abstracts of the CHI Conference on Human Factors in Computing Systems), Article No. 338.   DOI
- **DIS '25** (Proceedings of the 2025 ACM Designing Interactive Systems Conference).   DOI
- **ICCCNT '24** (15th International Conference on Computing Communication and Networking Technologies)   DOI
- Two first-author manuscripts under review.
- Mentor — GirlScript Summer of Code (ML/DL): guided contributors through PR-based code reviews, debugging, and documentation improvements.
- IBM Data Analysis with Python (Coursera); Deep Learning with PyTorch: Image Segmentation (Coursera); Mitacs Globalink Research Internship; Graduate Mitacs Fellowship Award.