# Utkarsh Kumar

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## PROJECTS

**Aspectify – Aspect-Based Sentiment Analysis (Hinglish & English)** *Oct 2026*

*Python, Scikit-learn, Pandas, NumPy, TF-IDF, Streamlit*

- Built a two-stage NLP pipeline for Hinglish and English e-commerce reviews: multi-label aspect detection across 6 aspects (battery, delivery, price, quality, packaging, service), then clause-level sentiment classification.
- Engineered Hinglish spelling normalization, negation-preserving stopword filtering, and word plus character n-gram TF-IDF features, with lexicon-based weak supervision to bootstrap training labels.
- Evaluated on a 500+ review hand-labeled gold set: Linear SVM achieved 0.86 macro F1 for aspect detection and 83.1% accuracy for sentiment; delivered a Streamlit dashboard for single-review and bulk CSV analysis.

**Customer Churn Prediction with Segmentation** *Sept 2026*

*Python, Scikit-learn, Pandas, NumPy*

- Built a hybrid ML pipeline on the IBM Telco dataset: K-Means customer segmentation followed by per-segment classifiers (Logistic Regression, Decision Tree, SVM).
- Benchmarked segment-wise models against a single global model on F1 and recall, improving recall from 73.2% to 80.03%.
- Prioritized recall over raw accuracy to surface more at-risk customers, validating segment-specific modeling against a single global baseline.

**CampX – Campus Portal** *Apr 2026*

*Node.js, Express, MongoDB, bcryptjs, Nodemailer*

- Built a campus resource-sharing portal with Node.js, Express and MongoDB, structured in an MVC architecture for modular, maintainable code.
- Implemented roster-validated signup, OTP email verification and session-based authentication to restrict access to verified campus students.
- Designed secure account flows (password reset, OTP-verified account deletion) via dedicated API routes, with bcryptjs password hashing and automated Nodemailer emails.

**Viora – Mood-Based Music App** *Feb 2026*

*Node.js, Express, MongoDB, EJS, face-api.js*

- Built a full-stack music app that detects 7 facial emotions in the browser using face-api.js (pretrained model) and auto-generates mood-matched playlists with autoplay.
- Implemented JWT authentication, playlists, favorites and listening history in an MVC architecture on Node.js, Express and MongoDB.
- Integrated YouTube-based streaming that avoids Data API quota limits, so playback is not capped by Data API quotas.

**Aurex – Voice-Controlled System Automation** *Dec 2025*

*Python*

- Built a Python voice assistant that automates everyday system tasks (launching apps and websites, playing YouTube media, setting alarms) through spoken commands.
- Integrated live data features, including weather and web search, so the assistant can answer spoken queries with current information.
- Designed a command-matching layer that maps spoken phrases to system actions for hands-free control of the desktop.

## TECHNICAL SKILLS

**Languages:** C, C++, Python, Java, JavaScript, HTML, CSS

**Frameworks:** Node.js, Express.js, NumPy, Pandas, Matplotlib, Scikit-learn, Streamlit

**Databases:** MongoDB, MySQL

**Developer Tools:** Git, GitHub, Cursor, VS Code