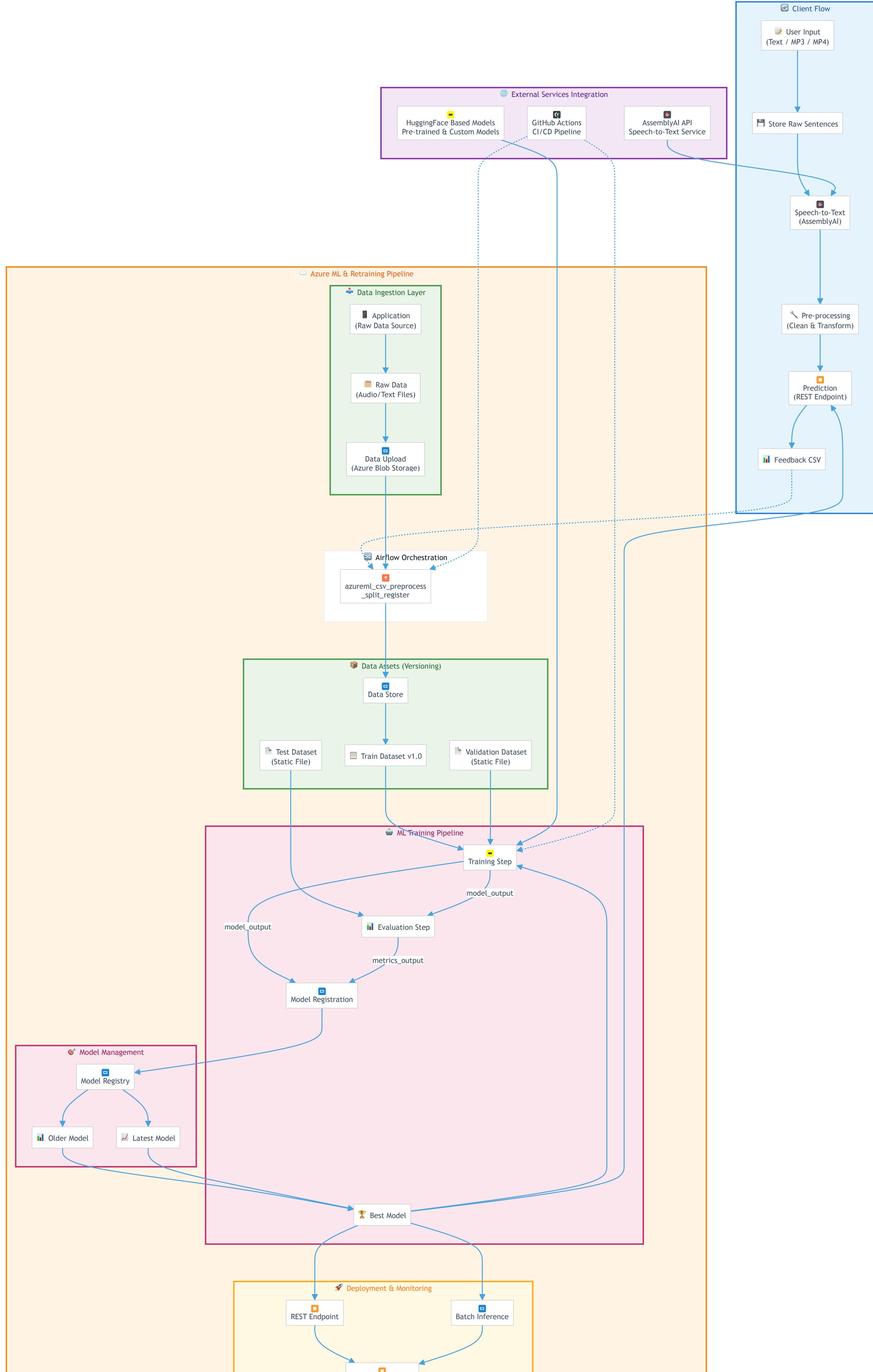


Data Pipeline Architecture

MLOps Pipeline with Azure ML, Airflow Orchestration & External Service Integration



How to Read This Diagram

- Solid Arrows:** Direct data flow or process execution
- Dotted Arrows:** External service dependencies or triggers
- Colored Sections:** Different layers of the architecture (Client, Azure ML, External Services)
- Service Logos:** Actual tools/platforms used (Azure, HuggingFace, AssemblyAI, etc.)
- Static Files:** Validation and Test datasets are pre-existing files, not generated
- Feedback Loop:** Best Model feeds back into the prediction endpoint for production use

Tools & Technologies

	Microsoft Azure	Cloud platform for ML services, storage, and deployment
	HuggingFace	ML model hub for transformers and custom emotion models
	AssemblyAI	Speech-to-text API for audio transcription
	FastAPI	High-performance Python web framework for REST endpoints
	Apache Airflow	Workflow orchestration platform for data pipeline automation
	Github Actions	CI/CD automation platform for continuous integration