Mykola A.
Senior AI/ML Engineer / Back-End Developer

SUMMARY

- AI/ML Engineer and Python Developer with 6+ years of experience designing and deploying production-grade AI systems and scalable backend services using FastAPI, PostgreSQL, Redis, and Docker.
- Expertise in Generative AI, LLMs, RAG pipelines, multi-agent systems, and real-time Voice AI, demonstrated by leading complex projects integrating Whisper, ElevenLabs, LangChain, LangGraph, and pgvector.
- Proficient in asynchronous programming with Python asyncio, building custom real-time voice pipelines, and managing multi-phase conversational agents with compliance-critical logic.

TECHNICAL SKILLS

Main Technical Skills	Python (6 yr.), FastAPI (3 yr.), PostgreSQL (3 yr.), LangChain (4 yr.), LangGraph (3 yr.)
Programming Languages	Python (6 yr.)
Python Libraries and Tools	Alembic (3 yr.), AsyncIO (1 yr.), Pillow, PyTesseract, pytest, PyTorch, Scikit-learn, Streamlit, TensorFlow
AI & Machine Learning	ElevenLabs (2 yr.), Hugging Face, LangChain (4 yr.), LangGraph (3 yr.), LlamaIndex, n8n, ollama (1 yr.), OpenAI (2 yr.), OpenCV, PyTorch, Scikit-learn, TensorFlow, Transformer, Whisper (2 yr.)
Python Frameworks	FastAPI (3 yr.)
Java Frameworks	Play Framework (1 yr.)
Scala Frameworks	Play Framework (1 yr.)
Data Analysis and Visualization Technologies	DVC, Sisense (1 yr.)
Databases & Management Systems / ORM	MySQL, Neo4j (2 yr.), PostgreSQL (3 yr.), SQLAlchemy (3 yr.)
Cloud Platforms, Services & Computing	AWS
Deployment, CI/CD & Administration	Active Directory, GitLab CI
Third Party Tools / IDEs / SDK / Services	Asterisk (1 yr.)

Version Control	BitBucket, Git, Github Actions
SDK / API and Integrations	FastAPI (3 yr.), Telegram API
Codecs & Media Containers	Ffmpeg (1 yr.)
Web/App Servers, Middleware	Nginx
QA, Test Automation, Security	pytest, Selenium
Other Technical Skills	AD, Groq (1 yr.)

WORK EXPERIENCE

AI/ML Engineer | Back-End Developer (AI Voice Verification Assistant)

Duration: 1 year
Summary:

- A voice-to-voice AI telephony system designed to automatically call clients for identity validation and account/status confirmation
- The system manages real-world call flows including voicemail detection, IVR navigation, and dynamic conversation handling, leveraging Retrieval-Augmented Generation (RAG) to fetch relevant client and contextual data during live calls

Responsibilities:

- Architected and developed complete backend infrastructure with FastAPI REST APIs, admin panel endpoints, and Celery workers for asynchronous VoIP call processing.
- Implemented end-to-end VoIP integration with Asterisk via SIP/RTP protocol, including authentication, call initialization, audio streaming, and DTMF signal handling.
- Built AI-powered conversation pipeline integrating Voice Activity Detection (VAD), Whisper for speech-to-text, LLM via Groq API for response generation, and ElevenLabs for text-to-speech.
- Built Retrieval-Augmented Generation (RAG) system using pgvector to fetch context-specific instructions during live calls.
- Developed intelligent call scenario handling for IVR navigation, voicemail detection, and live human interaction.
- Implemented conversation transcript tracking and automated outcome analysis with intelligent status classification.
- Designed PostgreSQL database schema with encryption for sensitive contact data, using SQLAlchemy ORM and Alembic migrations.
- Configured audio processing pipeline with ffmpeg and FunASR for real-time voice processing.

Technologies: Python (FastAPI), SQLAlchemy, Alembic, PostgreSQL, pgvector, Celery, Redis, Asterisk, Whisper, ElevenLabs, Groq API, Ollama, ffmpeg, FunASR

AI Engineer / Backend Developer (Voice agent for calls)

Duration: 1 year
Summary:

- Development of a custom real-time AI voice agent pipeline for debt collection automation
- The system supports low-latency, multi-phase voice conversations, preserves LangGraph dialogue state, handles user interruptions without losing speech, and enforces compliance-critical call flows

Responsibilities:

- Designed and implemented a custom asynchronous voice pipeline with separate listener, generator, and controller components.
- Integrated STT, LLM, TTS, VAD, and end-of-utterance detection into a real-time conversational system.
- Worked with LangGraph-based dialogue phase management, interruption handling, streaming LLM responses, tool-call-based phase routing, and compliance-sensitive turn-taking logic.
- Optimized response latency and reduced speech loss during overlapping user/bot speech.

Technologies: Python, asyncio, LangGraph, OpenAI GPT-4, ElevenLabs, TTS, Fireworks AI, Whisper, TenVAD, TurnSense, STT/TTS pipelines

AI Engineer / Backend Developer (Smart system for legal case analysis)

Duration: 2 years
Summary:

- Development of an AI-powered legal case analysis system for the US legal domain
- The system processes precedent law cases using LLM-based chains, extracts legal entities, relationships, facts, arguments, decisions, and reasoning patterns, transforming them into a structured knowledge graph in Neo4j
- It analyzes user-submitted cases against the graph and similar precedent cases to estimate case strength and generate deeper reasoning

Responsibilities:

- Designed and implemented LLM chains for processing legal documents and extracting structured knowledge from precedent law cases.
- Built logic for transforming case information into a Neo4j knowledge graph, including entities, legal concepts, relationships, case facts, arguments, and outcomes.
- Developed RAG-based analysis over the graph to compare user-submitted cases with similar historical cases.
- Implemented deep multi-step prompt pipelines in LangChain for evaluating case strength, identifying weak points, highlighting missing details, and supporting legal reasoning with precedent-based context.

Technologies: Python, LangChain, Neo4j, Cypher, OpenAI / LLM APIs, RAG, Graphs, Legal NLP

AI Engineer / Backend Developer (Smart hiring system with chatbot and voice mode integration for hiring process)

Duration: 2 years
Summary:

- Development of an AI-assisted hiring platform for technical candidate screening and evaluation
- The system includes a chatbot conducting preliminary technical interviews, analyzing candidate responses, and generating structured reports for hiring managers
- It also features an LLM-powered comparison tool for analyzing selected candidates based on interview history and evaluations

Responsibilities:

- Designed and implemented the AI interview flow using LangGraph, including multi-step dialogue logic, interview phases, validation nodes, and structured candidate evaluation.
- Developed LLM chains for analyzing candidate answers, detecting response quality, evaluating technical skills, identifying weak and strong points, and assessing overall interview tone.
- Worked on prompt engineering to balance user-friendly, human-like conversation with technically meaningful questions.
- Implemented logic for checking naturalness and relevance of candidate responses, with deeper multi-step analysis based on full interview history.
- Supported backend development for storing interview data, candidate analysis results, ratings, tags, and manager-facing comparison features.

Technologies: Python, FastAPI, LangGraph, LangChain, OpenAI / LLM APIs, RAG, PostgreSQL, Pydantic

EDUCATION

- **Bachelor's degree in Computer Engineering**
  National University of Life and Environmental Sciences
- **Master's degree in Computer Engineering**
  National University of Life and Environmental Sciences
- **PhD student in Computer Science**
  National University of Life and Environmental Sciences