

# Ketan Sharma

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## Personal Profile

I'm a 22-year-old MSc Data Science & AI student at UAL Creative Computing Institute, London, UK, originally from Mumbai, India. Specializing in computer vision, deep learning, and LLMs with professional experience as crowd technical director at DNEG. **I focus on MLOps, RAG systems, agentic AI, and scalable deployments on cloud and simulated systems.** I have experience working with **Python, C++, TensorFlow, PyTorch**, and a range of creative and technical tools for building AI-driven media solutions and real-time interactive experiences. My recent projects include emotion-based media playback, AI-powered interactive systems, and optimization algorithms for scalable applications. Coming from an underprivileged background, I've reached this position through merit and determination, and I'm known as a reliable team player with strong adaptability and communication skills. I stay physically active through **running and weightlifting, maintain aquariums, explore quantum computing, and enjoy cooking.** Always open to collaborations in AI, creative technology, and advanced coding challenges.

## Key Skills

- **Programming Languages:** Python, C++, JavaScript
- **Machine Learning Frameworks:** TensorFlow, PyTorch, Scikit-learn, Keras
- **Data Science Tools:** Pandas, NumPy, Matplotlib, Data Analysis, Data Wrangling
- **AI Specializations:** Computer Vision, Deep Learning, Natural Language Processing (NLP), Generative AI, Reinforcement Learning
- **Cloud Platforms:** AWS, Azure, Google Cloud Platform
- **Technical Capabilities:** Real-time Systems, Algorithmic Problem-Solving, Simulation, Optimization

## Personal Attributes

- **Team Player:** Collaborative approach with strong communication skills across diverse teams
- **Adaptable:** Quick to learn new technologies and adjust to changing project requirements
- **Reliable:** Consistent delivery of high-quality work with attention to detail
- **Innovation-Driven:** Passionate about applying cutting-edge AI solutions to real-world problems
- **Multilingual:** Fluent in English and Hindi.
- **Research-Oriented:** Strong analytical thinking and problem-solving capabilities

# Projects

## Emotion Detection Model

- **Custom CNN Architecture:** Built a 4-layer convolutional neural network with batch normalization and dropout regularization, achieving 82% accuracy on emotion classification across 7 emotional states.
- **Real-time Computer Vision Pipeline:** Implemented an OpenCV-based face detection and emotion recognition system with optimized frame processing for real-time webcam input.
- **Advanced Model Training:** Employed class-weighted loss functions, weighted random sampling, and data augmentation to handle imbalanced datasets and improve model generalization.
- **Multi-threaded Architecture:** Designed a concurrent processing system with separate threads for video capture, emotion detection, and audio playback to ensure smooth real-time performance.
- **Audio Processing Integration:** Integrated librosa for dynamic tempo scaling and time-stretching algorithms that modify music playback based on detected emotional states.
- **PyTorch Deep Learning:** Utilized the PyTorch framework with the Adam optimizer, learning rate scheduling, and label smoothing for robust model training and convergence.

## Virtual Real-time Clothing Try-on System

- Currently building a real-time virtual fitting solution that enables users to try on clothing digitally using computer vision and augmented reality techniques
- Project in active development phase

## Automated Music Festival Poster Image Generation

- **Deep Learning Image Generation:** Integrated Stable Diffusion 3 (SD3) and Florence-2 models for high-quality automated poster generation with advanced text-to-image synthesis capabilities
- **LLM-Powered Prompt Engineering:** Implemented large language model integration for dynamic prompt optimization and refinement, enabling context-aware content generation
- **Hyper-Personalization Pipeline:** Developed automated workflow for generating customized promotional content based on user demographics and preferences with scalable batch processing
- **Multi-Modal AI Integration:** Combined computer vision models with natural language processing for intelligent text encoding and visual content generation
- **Production-Ready Workflow:** Built end-to-end automation pipeline including image loading, resizing, text processing, generation, and output management with iterative refinement capabilities
- **Scalable Architecture:** Designed system for processing multiple images with efficient resource management and automated quality control mechanisms

## Health Habit Buddy

- **Local AI Integration:** Implemented offline-first architecture using Ollama and LLaMA 2 model for privacy-focused AI text generation without cloud dependencies
- **Streamlit Framework:** Built clean, modern user interface using Streamlit with minimalist black-and-white design for optimal user experience
- **Privacy-Focused Architecture:** Developed 100% local processing system ensuring user data remains on-device with no external data transmission
- **Personalized AI Messaging:** Created intelligent encouragement system that generates contextual motivational messages based on user habit completion patterns
- **Offline-First Design:** Engineered application to function completely offline, targeting wellness creators and health-conscious users prioritizing data privacy

## Employment History

**Crowd Technical Director | DNEG | Mumbai, India** *Jan 2022 – Jun 2023*

- Developed and implemented sophisticated crowd simulations for film and television productions
- Applied algorithmic problem-solving using Python/C++ scripting to optimize crowd behaviors and large-scale scene efficiency
- Collaborated with VFX teams to integrate complex simulations, ensuring technical accuracy and artistic vision
- Managed technical workflows for large-scale projects, ensuring assets were properly structured and accessible

## Education

**UAL Creative Computing Institute | London, UK**

MSc, Data Science & AI for the Creative Industries (2024-25)

- Specializing in Computer Vision, Deep Learning, and real-time AI applications
- Focus on applying AI algorithms to creative and industrial problem-solving

**Amity University Mumbai | Mumbai, India**

BSc, Animation, Interactive Technology, Video Graphics & Special Effects (2020–2023)

- Developed strong technical foundation in creative technology and problem-solving
- Built expertise in digital content creation and technical workflows

## Languages

**English:** Fluent • **Hindi:** Native • **Thethi:** Native • **Marathi:** Conversational