# Krishna Narendrabhai Parmar

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## HIGHLIGHTS OF QUALIFICATIONS

- **AI/Machine Learning:** Proficient in PyTorch and U-Net architectures for medical image segmentation, achieving 97% accuracy in DICOM processing and table removal applications
- **Full-Stack Development:** Experienced in MERN stack with RESTful APIs, JWT authentication, WebSocket integration, and responsive web application development
- **Real-Time Systems:** Skilled in live data integration, automated dashboards, API consumption (Yahoo Finance), and interactive visualization with technical analysis indicators
- **Programming & Game Development:** Advanced Python/Pygame expertise with OOP, physics simulation, collision detection, and graphics programming including particle systems
- **Database & Backend:** Proficient in MongoDB, CRUD operations, scalable architecture design, and performance optimization with caching mechanisms
- **Financial Analytics:** Experience in building trading dashboards, technical indicators (RSI, MACD, Bollinger Bands), multi-timeframe analysis, and automated data processing systems
- **NLP certified** with continuous learning approach to emerging technologies

## SKILLS

**Languages:** C, C++, C#, Java, Python, HTML5, .Net, CSS3, JavaScript, PHP
**Frameworks and Libraries:** Mongo, Express, React, Node, Ajax, Postgres, Oracle, MySQL, pytorch,
**Soft Skills:** Team work, Effective Communication, Attention to Detail, Problem-solving, Result-Driven, Proactive Attitude

## EXPERIENCE

### Python Developer (May 2025 - On going)

### Arthro3D.

This company works on developing a medical imaging software pipeline that uses deep learning for table segmentation in DICOM medical images. The goal is to build a U-Net model to identify and remove examination tables from medical scans, then split the resulting images into left and right body segments. These processed images will be used to generate 3D bone models for surgical planning, specifically to assist surgeons in preparing for implant procedures.

## EDUCATION

**B.Tech Computer Engineering**, Birla Vishvakarma Mahavidyalaya - Anand, Gujarat, India (2022-2025)
Acquired CPI: 6.13

**Diploma in Computer Engineering**, BBIT - Anand, Gujarat, India (2019-2022)
Acquired CGPA: 8.64

## PROJECTS

### Table Removal & Bilateral CT Separation Using AI/ML | UNet model | Torch | pydicom:

- Developed an application of a U-Net deep learning model to the task of table cutting in DICOM files.
- The challenges of medical image segmentation were Image Complexity & Data Variability and U-Net addresses them Effectively.
- The Model is trained on various types of datasets having different types of table/bed achieving precision of 0.9, accuracy of 97%, dice score of 0.89 and dice loss of 0.002.
- Able to Classify table/bed in DICOM files and remove table providing the clean bone structure and Separation of Bilateral CT.

### 3D Hip Surgery Planning Pipeline (3D-HSPP)

- **Developed a 3D medical imaging pipeline** for automated hip surgery planning that processes CT scan data to predict anatomical landmarks across pelvis, femur, and spine structures with bilateral processing capabilities.
- **Implemented mesh generation and point cloud registration** using marching cubes algorithm and Coherent Point Drift (CPD) with statistical averaging to handle patient-specific anatomical variations and coordinate transformations.
- **Engineered production-ready architecture** with multi-threaded processing, comprehensive error handling, and support for clinical data formats (NRRD, CSV, XML) ensuring reliable integration with surgical planning.

- **Integrated medical imaging stack** including Open3D, VTK, NumPy, and specialized libraries to create a clinical grade system for automated landmark prediction and 3D medical data processing.

### 3D Medical Image Processing Pipeline for Orthopedic CT Analysis(Femur Condyle):

- **Built automated CT processing pipeline** for batch processing NRRD medical images with bone segmentation using Hounsfield Unit thresholding, 3D mesh generation via marching cubes, and standardized OBJ output for surgical planning.
- **Developed interactive visualization and measurement tool** with matplotlib-based GUI featuring real-time slice navigation, hip center detection, and precise anatomical landmark identification capabilities.
- **Engineered coordinate system standardization** using rotation matrices and affine transformations to align patient anatomy across datasets with robust 3D spatial reorientation based on anatomical landmarks.
- **Created scalable multi-patient processing system** with comprehensive error handling that reduced manual processing time from hours to minutes per case using Python, NumPy, Open3D, and medical imaging libraries.

### Femoral Condyle Analysis Pipeline (Medical Imaging Project)

- Developed a Python pipeline to analyze **femoral condyles** from 3D meshes and medical imaging data.
- Implemented **multi-threaded CPD affine registration** to align reference femur models with patient meshes.
- Automated **landmark extraction** and **circle fitting** to estimate medial and lateral condyle radii.
- Designed an **interactive visualization tool** using Matplotlib for manual refinement of condyle landmarks.
- Integrated **Open3D, VTK, NRRD, and SciPy** for 3D mesh processing, image cropping, and volume handling.
- Enhanced orthopedic imaging workflows by combining **automatic measurement** with **manual correction**.

### Batch Video Transcription System with AI-Powered Speaker Diarization":

- **Built automated video transcription system** using OpenAI Whisper and SpeechBrain for speech-to-text conversion with speaker identification, integrating audio processing pipeline via MoviePy/LibROSA and voice embedding extraction.
- **Implemented advanced speaker separation** using K-means clustering on MFCC coefficients, chroma vectors, and spectral contrast features with temporal windowing to accurately segment 2-5 speakers and detect overlapping speech.
- **Developed responsive multi-threaded GUI** with Tkinter interface featuring batch processing capabilities, recursive file discovery, real-time progress tracking, comprehensive logging, and exportable execution reports.
- **Optimized for cross-platform deployment** with GPU acceleration (CUDA support), CPU fallback mechanisms, robust error handling with graceful degradation, and dual-output system for centralized transcript management.

### Real Time Stock Market Dashboard:

- Developed a real-time financial analytics dashboard with live stock data integration using Yahoo Finance API and automated 60-second refresh cycles
- Implemented comprehensive technical analysis suite featuring candlestick charts, moving averages (SMA/EMA), RSI, Bollinger Bands, and MACD indicators
- Built interactive multi-timeframe visualization system supporting 1-minute to 1-year data periods with volume analysis and color-coded trading indicators
- Designed responsive web interface with tabbed layouts, custom CSS styling, and data export functionality for CSV downloads
- Integrated company intelligence features displaying real-time metrics, market capitalization, business summaries, and sector information
- Optimized performance through data caching mechanisms and created user-friendly controls for popular stocks with custom symbol input.

## CERTIFICATES

- NPTEL Course certificates: NLP (Natural Language Processing) (Jan-Apr 2024)