

# Surya Samarth Jagadish

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## SUMMARY

Data Analyst with 2+ years of experience in data acquisition, trend analysis and extracting insights from complex audio/image datasets, enhancing efficiency in healthcare/ research environments. Client-focused, detail-oriented, blending innovation with emotional intelligence.

## EDUCATION

<b>DREXEL UNIVERSITY   Master of Science in Computer Engineering</b> ◦ Core Courses: Applied Machine Learning, Data Visualization, DBMS, Pattern Recognition	<b>Philadelphia, PA   Sep 2022 – Jun 2024</b>
<b>PRESIDENCY UNIVERSITY   Bachelor of Technology in Computer Science</b> ◦ Core Courses: Data Structures & Algorithms, Object Oriented Programming, IOT	<b>Bangalore, India   Aug 2018 – Mar 2022</b>

## CORE SKILLS

- **Languages:** Python (Pandas, NumPy, Seaborn, Matplotlib), MATLAB, C++/C, Java, SQL(Oracle, MySQL), MongoDB
- **Signal & Biomedical Data Processing:** Librosa, OpenSmile toolkit, MFCCs, STFT, Wavelet Transform, EDM Coefficients
- **Statistical Techniques:** Regression Analysis, Classification Algorithms, Feature Selection, Model Optimization
- **Cloud Platforms & Tools:** AWS (EC2, S3), Docker, Git, Linux Environments, Data Visualization (Tableau, Power BI)
- **Machine Learning & Modelling:** TensorFlow, PyTorch, Keras, XGBoost, SVM, CNN, Predictive Modelling

## EXPERIENCE

<b>DREXEL UNIVERSITY</b> <b>Data Analyst (Metadata Research Center)</b> <b>Core Initiative: Digitized Diatom (Microscopic Algae) samples via Metadata Research</b> • Enhanced database performance using SQL, identifying redundant metadata patterns to improve retrieval efficiency • Integrated DataFed/Globus APIs to unify data governance frameworks, ensuring scalability/compliance with organizational objectives • Built Python parser, converting diatom imaging files to JSON schema, standardizing unstructured metadata to enhance interoperability • Developed an image compression algorithm (Python), using data structures like KD-Trees/Quadtrees, reducing TIFF files from 100 to 15 • Engineered metadata-driven storage solutions with Docker containers to streamline diatom data retrieval for researchers	<b>Philadelphia, PA   Oct 2024 – Present</b>
<b>Data Science Researcher (Co-Op)</b> <b>Key Project: ML- Driven Heart murmur classification (Circor Heart Sounds Dataset)</b> • Performed exploratory data analysis (EDA); used STFT, wavelet transform, and EMD techniques to denoise audio and extract features • Trained CNN & SVM models to classify normal/abnormal heartbeats (87% accuracy), reducing murmur misclassification by 18% • Leveraged OpenSmile toolkit to extract 10+ acoustic features, identifying novel predictors for improved classification accuracy	<b>Philadelphia, PA   Sep 2023 – Jan 2024</b>

## ANMERKUNG SOLUTIONS

<b>Data Analyst – AI/ML (Autonomous Systems)</b> • 2D Annotation tool development: ◦ Optimized a MobileNet/YOLO inspired architecture, automating 90% of visual-data annotation for autonomous driving systems ◦ Collaborated cross-functionally to build RESTful APIs (Java/Spring) for backend optimization and streamlined data integration ◦ Tuned hyperparameters to prioritize true-positives/negatives, improving detection accuracy and reducing manual corrections by 60% • Designed a custom neural network to detect/classify Indian road signs, annotating 3000 images across 10 signboard classes	<b>Bangalore, India   Nov 2021 – Aug 2022</b>
<b>Data Analytics Intern (Computer Vision &amp; Vehicle ADAS)</b> • Object Detection Domain: ◦ Curated a 2000-image dataset with pixel-perfect bounding boxes via OEM proprietary tool to aid autonomous driving algorithms ◦ Boosted German OEM KPIs by 2% using semantic image segmentation, improving ground truth accuracy ◦ Identified visibility thresholds/blockage percentages from ground truth data, reducing latency by 300 milliseconds in vehicle ADAS • Built an OCR tool to detect Geometric Dimensioning and Tolerancing (GD&T) symbols in 2D mechanical drawings ◦ Enhanced symbol recognition accuracy to 94%, significantly reducing manual drafting/validation efforts	<b>Bangalore, India   May 2021 – Oct 2021</b>

## PROJECTS & TECHNICAL PROFICIENCY

<b>SIMILARITY DETECTION OF MUSIC COMPOSITIONS (Music Information Retrieval) (Sep 2023)</b> • Designed an XGBoost model for audio similarity detection using MIR fundamentals (MFCCs, spectral contrast, chord progression) • Combined Librosa/OpenSmile (Python) for audio feature extraction (Mel- spectrograms, tempo (BPM), timbre, melodic contours) • Demonstrated real-world relevance by quantifying thresholds to distinguish inspiration from infringement, aiding legal/creative workflow	
<b>SIMULATION OF HAPTIC FEEDBACK GLOVE FOR GUITARISTS (Jan 2024)</b> • Developed AI glove prototype (ROS/Gazebo environment) using One-Class SVM trained on pentatonic-scales to detect inaccurate notes • Crafted a custom 3D glove model (Blender) to prototype sensor-actuator placements and refine finger movement tracking • Embedded motors to provide tactile feedback, enhancing guitar learning process for beginners	

## ACHIEVEMENTS & CERTIFICATIONS

- **Dean’s List Fellowship award, Drexel University, Philadelphia, PA – 6 Semesters**
- **CITI Conflicts of Interest- IRB/ Research Administration COI** – Certified in ethical data collection by mitigating conflicts of interest
- **Human Subjects Research- IRB/ Research Administration** - Trained in ethical and regulatory standards for human-centered research
- **Interests** : Signed Artist (Guitarist/Vocalist), Freelance Videographer/ Editor, State-level Basketball player