

# Kathiravan Natarajan

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## Technical Skills

**Programming Languages & Tools:** Python, C++, SQL, PostgreSQL, NoSQL (MongoDB, Cassandra), MATLAB, Tableau, Weka  
**Frameworks & Libraries:** TensorFlow, PyTorch, Keras, Scikit-learn, Pandas, NumPy, SciPy, OpenCV, NLTK, Statsmodels, Seaborn  
**Machine Learning & Algorithms:** SVM, KNN, K-Means, Regression (Linear, Logistic, etc.), PCA, SVD, Decision Trees, Random Forests, Gradient Boosting

**Big Data & Distributed Systems:** Databricks (PySpark, SparkSQL, MLlib, MLflow)

**Cloud Platforms:** AWS (SageMaker, Redshift, DynamoDB, RDS, DMS, S3), Google Cloud (Vertex AI, BigQuery, Pub/Sub, Dataflow), Azure (Databricks, Blob Storage), AutoML platforms

**Data Engineering & Pipelines:** Apache Beam, GKE, AWS Kinesis, Airflow, Delta Lake, Snowflake, Lakehouse Architecture

**APIs & DevOps:** Flask (Web APIs), RESTful Services, Docker (Containerization), Kubernetes (Orchestration)

**Computer Vision:** YOLOv7, VGG, ResNet, AlexNet, SSD, UNet (semantic segmentation), CNNs, Hybrid CNN-RNN architectures

**Natural Language Processing & GenAI:** Transformers, SBERT, DeBERTa, RoBERTa, DistilBERT, GPT-4, ChatGPT, Prompt Engineering, Generative AI pipelines

**Mathematics & Statistical Analysis:** Linear Algebra, Multivariate Calculus, Probability, Time Series Analysis, Descriptive & Inferential Statistics

**Project Management & Collaboration Tools:** Agile, Scrum, Jira (Scrum Boards), Asana, Trello

## Publications

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1. Hand Gesture Controlled Drones - An Open-Source Library, Accepted in ICDIS 2018. This paper is a computer vision-based work on hand gesture detection & classification using Haar + AdaBoost and integrates the work with drones.
2. An Empirical Study on Network Anomaly Detection using Convolutional Neural Networks (CNNs), Accepted in ICDCS 2018. Created a CNN 1D classifier to classify the network security data for anomaly detection.

## Teaching Experience

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### Computer Science Instructor - Texas A&M University-Commerce

Commerce, TX | August 2023 – Current

- Delivered engaging and structured instruction across core CS courses, including Databases, Web Programming, Information Security, Data Structures & Algorithms, and Computer Networks to diverse undergraduate cohorts.
- Designed hands-on labs and project-based assignments that emphasized real-world application of database systems, secure coding practices, and modern web technologies.
- Integrated current industry case studies, protocols, and network architectures into lectures, bridging theoretical knowledge with practical relevance.
- Fostered an active learning environment by incorporating collaborative projects, in-class coding challenges, and peer code reviews.
- Partnered with cybersecurity and software engineering professionals to deliver guest sessions, offering students exposure to current industry practices and career pathways..

### Adjunct Faculty - Texas A&M University-Commerce

Remote | August 2020 - December 2021

- Created and taught upper-level undergraduate courses in Computer Networks and Information Security through synchronous and asynchronous remote delivery formats.
- Developed digital-first course materials including lecture slides, interactive assessments, and video tutorials tailored for online learners.
- Emphasized foundational protocols, threat models, and secure communication techniques through case-driven instruction and simulations.
- Provided timely academic support and mentorship through virtual office hours, discussion boards, and individualized feedback.
- Received positive student feedback for precise delivery, technical depth, and fostering critical thinking in cybersecurity and networking topics.

## Certifications

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- AWS ML Specialty
- AWS Solution Architect Professional
- AWS Cloud Security

## Education

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Texas A&M University-Commerce - Computer Science, M.S. (Data Science)