Chethan Danivas S.A.

Seasoned Engineering Leader and AI Practitioner
Bengaluru, Karnataka
cdanivas3_ar3@indeedemail.com
+91 98455 36190

Chethan is a seasoned AI Practitioner and Software Architect with 20+ years experience in Software Product/Applied Research/AI Solutions Development, who currently focuses on AI based Products and AI Solution development by adopting Software Architecture and Design best practices, Project Management, Team Leadership and Mentoring skills, Stakeholders Management, Engineering Management and innovative AI/ML techniques.

• Has overall experience of 20+ years including SaaS AI Product, Enterprise Web Application Products, Applied Research and AI/ML solution development.
• Has rich Software Product Architure, Design and Development experience in multiple domains including Healthcare, Banking / Finance and Telecom. Built Enterprise Software Systems, Web based Systems and SaaS Applications with latest stack like Reactjs, Springboot/Java Microservices, REST API, MS SQL Server, MongoDB, Hadoop/Spark and Kafka.
• Software Architecture and Design:
Adopted SoA, microservices, and Architecture Patterns/Design Patterns like Layered Architecture, Broker, Publisher/Subscriber, Strategy, Facade and Leader-Follower concurrency pattern to address Quality Attributes including Performance, Scalability, Availability and Security.
• Has 15 years of progressive experience in AI/ML solution Development including Applied Research
• Skilled in Machine Learning, Statistical Analysis, Time Series Modeling, Sequence Prediction, Deep Learning (ANN, CNN, RNN, LSTM), Big Data Platforms - Hadoop, Spark, Kafka. Worked on projects from multiple industries including Telecom, BFSI, Retail/E-Commerce, Biometrics, Energy and Utilities.
• Applied Optimization techniques in the area of Logistics (Delivery), Inventory Optimization with Demand Forecast for an online Retailer.
• Applied research in the area of Computer Vision at Infosys. Developed Face Recognition System. Used it as part of Client PoC. Developed low memory footprint, high performing ML algorithms for Face Recognition from scratch in C/C++. Also worked on Camera Integration for image capture.

Thought Leadership:

• Contributed to 1 Patent (USPTO, Granted) in Image Analytics
• Co-Author of 3 Publications in reputed Conferences in the area of Machine Learning/Image Analytics.
• Co-Author of 1 Book Chapter in the area of AI/ML

Enterprise Web Applications, Cloud-Native Applications (Software Products):

• Hospital Information System (Soarian Cardiology @ Siemens Healthcare unit)
Technologies: Java/JEE, C++, MS SQL Server

• Banking Product (Finacle @ Infosys)
Technologies: Java/JEE, C++, Oracle DB

• Predictive Maintenance product in Telecom - SaaS AI Product @ Avanseus
Technologies: ReactJS, Spring boot Microservices, REST API, Hibernate, MongoDB, AWS, Kafka

AI/ML Solutions:

• Predictive Maintenance product in Telecom (SaaS AI Application)
• Recommendation System for an online Retailer
• Customer Churn prediction in Telecom
• Demand prediction for an online Retailer
• Equipment and Equipment Components Detection using Computer Vision
• Face Recognition System for VIP identification in bank branch
• Customer churn prediction in Telecom
• Bank Marketing : Marketing campaign for banking products
• Fraud detection in Banking
• Solar power generation prediction
• Demand prediction for an online retailer
• Route optimization for last mile delivery for an online retailer using MILP
• Inventory optimization for an online retailer

Strong Educational background :

• Pursuing PG Level course in Artificial Intelligence and Autonomous Systems from Indian Institute of Science (IISc) Bengaluru.

• PhD at IIIT Bangalore 2012 - 2017 (could not complete):
• Finished course work with courses in Machine Learning and Mathematical Programming (Optimization) - Linear Programming, ILP, MILP, Convex Optimization
• Published a paper on object detection and object counting - Computer Vision applied to Sericulture.
• The Paper was chosen for Plenary Talk...

• M.S. in Computer Science from Univ. of Texas, Arlington. (in Dean's Merit List)
• MBA (PGSEM) from IIM Bangalore (focus: Strategy and Innovation).

Work Experience

Professional Development

IISc Bangalore - Bengaluru, Karnataka
September 2023 to Present

Pursuing advanced PG Level course:
• Artificial Intelligence and Autonomous Systems

Course Curriculum includes:

• Machine Learning
• Deep Learning

• Reinforcement Learning and its applications to Autonomous Vehicles like Driverless Car, Drones, UAV and Robots.
• Robotics: Path Planning, navigation guidance and control

Lead Product Architect | Senior Data Scientist

Avanseus - Bengaluru, Karnataka
June 2019 to September 2023

Avanseus is a major player in developing AI driven Predictive Maintenance solutions for telecommunication networks and manufacturing sector.

Responsibilities:

• Technology Strategy and Roadmap creation and maintenance, Software Architecture and High level design of the product.
• Design, Development, Testing and Delivery of multiple modules.
• AI models development, validation and deployment.

Technologies: Spring boot, Java/JEE, Rest API based microservices, ReactJS, MongoDB, Kafka, Docker/ Kubernetes, AWS.

ML Techniques applied:
Sequence Models, Time Series Forecasting, RNN, LSTM, NLP, Semantic Sentence Matching, Transformer model, Transfer Learning, Naive Bayes Classification.

ML Tools/Libraries:
Python, Scikit Learn, TensorFlow/Keras, PyTorch, NLTK, Google BERT.

Details:
Transitioned from JEE based architecture to ReactJS, Spring boot based microservices (Rest API) architecture with MongoDB as database.

Introduced Apache Kafka to import alarm data in real time.

Actively involved in design, code reviews and test case reviews.

Mentored Tech leads and junior data scientists/ software engineers in Software Design and data science areas.

Developed and maintained RNN based Deep Learning Algorithms for Network Equipment Fault Prediction. Also, developed Equipment Performance KPI prediction for health monitoring and threshold breach prediction.

Voice based Interface : Allows voice based queries on tickets and predicted faults data. Applied NLP techniques using Transformer, NLTK for text pre-processing, Google Speech-to-Text and Text-to-Speech APIs.

Root Cause Prediction: Applied Clustering techniques and Parent-Cause, Child Cause Correlation for predicting root cause of Predicted faults, Topology linking with Prediction. Applied Graph Algorithms to correlate predicted fault with Network Topology.

Developed Call Prediction and Repair Prediction models for FTTx network.

Involved in :

• Software Design/Development, Team and Project Management for multiple modules of the product.
• Modules included Predicted Fault, Topology linking with Prediction, Voice based Interface, Cross-Domain Correlation, Call Prediction and n FTTx network, ely involved in Architecture, Design and Code Review, Test cases review and overall design/ code/test execution till delivery.
• Project Management and Team Management, Technical Mentoring, Stakeholders management

Product Architect | Data Scientist

Intelligent Machines Lab - Pune, Maharashtra
January 2019 to June 2019

• Responsible for Architecture, Design and Development of the Natural Language Processing (NLP)Platform and related Products
• Leading a multi-dimensional team of Software Architects and NLP Engineers
• Interfacing with Stakeholders across geographies
• A hybrid approach is adopted, that incorporates both Rule-based and Statistical NLP
• Multiple applications in education and other domains

AI Solution Architect | Data Scientist | Applied Researcher

Infosys Ltd - Bengaluru, Karnataka
January 2008 to January 2019

• AI solutions development including model building/deployment and software development/delivery in multiple industries including Retail / E-Commerce, BFSI, Energy and Utilities and Telecom.
• Applied Research in the area of Machine Learning / Image Analytics with a working face recognition system and IP development in the form of 1 Granted U.S. Patent, 3 paper publications and a book chapter.

Some relevant AI/ML Projects:

• VIP Customer recognition at Branch entrance for privileged services in Bank branch
• Bank Marketing for deposit products
• Loan default prediction for a Bank
• Fraud Detection in Banking
• Recommendation System for an online Retailer
• Demand prediction for an online Retailer
• Solar Power generation Prediction
• Customer Churn prediction in Telecom

Prescriptive Analytics (Optimization):

• Route optimization for items delivery for an Online Retailer using MILP.
• Inventory Optimization for an online Retailer based on Demand prediction

Product Development Manager

Infosys - Bengaluru, Karnataka
October 2005 to December 2007

• Responsible for Architecture, Design and Development of multiple core banking Modules of Banking Product
• Led a team of about 40 people in Multi-Entity project. Transformed the product to enable Multi-Tenancy.
• Actively involved in Architecture, Design, Code and Test Case Reviews
• Interfaced with multiple stakeholders including Product Management, Quality Assurance, Configuration Management, Sales and Product Support teams.
• Contributed significantly to adoption of Design and Architectural Best Practices, Architectural Competency Development

Software Architect

Siemens Information System Ltd - Bengaluru, Karnataka
June 2000 to September 2005

• Played a key role in taking the Cardiology Information System Product from Siemens, Soarian Cardiology, from inception stage to a stage where it was deployed successfully in over 40 Hospitals.
• Integrated HIS with Medical Equipments data (CATH and other modalities)
• Led the software design and development team with very active participation in Architecture, Design and Coding activities.
• Siemens Soarian Cardiology won first place at TEPR awards in the year 2003

Prior to this I have had a stint as software engineer at Motorola, Princeton Information and as a Research Assistant at Automation and Robotics Research Institute (now called UTARI), Texas, USA.

Education

Doctoral degree in Applied Mathematics

International Institute of Information Technology - Bangalore, Karnataka
August 2012 to Present

MBA in Strategy, Innovation

Indian Institute of Management Bangalore - Bengaluru, Karnataka
2001 to 2007

M.S. in Computer Science

University of Texas at Arlington - Arlington, TX
1995 to 1997

Skills

• Machine learning (10+ years)
• Python (10+ years)
• Deep learning (9 years)
• Team management (10+ years)
• Software design (10+ years)

- Software architecture (10+ years)
- Leadership (10+ years)
- Neo4j (2 years)
- Spark (2 years)
- Tableau (2 years)
- Natural language processing (8 years)
- Computer vision (10+ years)
- Time Series Prediction (6 years)
- Sequence Modeling (5 years)
- MongoDB (7 years)
- RDBMS (10+ years)
- AI (10+ years)
- NoSQL (7 years)
- SQL (10+ years)
- Microsoft SQL Server (5 years)
- Oracle (3 years)
- Linear Optimization (2 years)
- Operations research (3 years)
- OpenCV (4 years)
- NumPy (10+ years)
- SciPy (10+ years)
- Pandas (10+ years)
- TensorFlow (7 years)
- Keras (7 years)
- Java (10+ years)
- Tomcat (10+ years)
- C (10+ years)
- C++ (10+ years)
- R (4 years)
- CPLEX (2 years)
- 2D/3D Geometry (4 years)
- ChatGPT3 (Less than 1 year)
- LLaMA2 (Less than 1 year)
- LangChain (Less than 1 year)

Awards

Spot Award - Avanseus

March 2023

• Received Award at Avanseus for technically leading my team in development of multiple modules of Predictive Maintenance Software product including Machine failure prediction, Equipment Performance KPI prediction, Voice based query, RCA prediction using AI/ML techniques and innovative approaches with high quality and within timeline.

Excellence in Teaching and Applied Research - Infosys

November 2012

Received Excellence Award at Infosys for contribution towards applied research in AI/ML and Employee Technical Training and Curriculum Development.

The change in curriculum (modernization of curriculum) introduced in Aspiring Architect program by me resulted in 4x registrations in the program and was a record for that program.

Excellence Award - Product R&D - Siemens

August 2002

Received Excellence Award (at SISL, Bangalore) for leading the team towards timely delivery of Soarian Cardiology 1.0 with high quality in a relatively short time.

Soarian Cardiology is a Cardiology Hospital Information System meant for Cardiology Hospitals and Cardiology Department of a Hospital.

Certifications and Licenses

IISc - Artificial Intelligence and Autonomous Systems

September 2023 to Present

Post-Graduate Level Course (In Progress) :

Artificial Intelligence and Autonomous Systems

• Machine Learning
• Deep Learning
• Reinforcement Learning and its applications to Autonomous Vehicles like Driverless Car, Drones and UAV.
• Robotics

Patents

Method for pre-processing an image in facial recognition system US 8798391 B2 (#US US 13/241,786)

https://www.google.com/patents/US8798391?dq=Chethan+Shikaripur+Annajirao+Danivas&hl=en&sa=X&ei=tqlnVOXPIJSiuQTq7IDADA&ved=0CCEQ6AEwAA

August 2014

A method preprocessing scheme that improves classification accuracy of a face recognition system comprises identifying a plurality of edges of an image. The method further comprises step of identifying a plurality of discontinuities in the plurality of edges of the image. Furthermore, the method

also comprises generating contiguous outline for the image. The last step of the method comprises filling a background of the image with at least one color.

Publications

Application of image analysis methods for quantification of fecundity in silkworm Bombyx mori L.

http://inserco.org/en/?q=previous_issue

January 2015

Image Analytics applied to Sericulture. The Paper was chosen for Plenary Talk...

Publisher: Sericologia - International Sericulture Commission

Robust Face Recognition with Illumination Normalization using a Reference Profile

http://ieeexplore.ieee.org/xpl/login.jsp?tp=&arnumber=6421377&url=http%3A%2F%2Fieeexplore.ieee.org%2Fxpls%2Fabs_all.jsp%3Farnumber%3D6421377

December 2012

Publisher:

12th IEEE Intl. Conf. on Hybrid Intelligent Systems, 2012

Description:
Illumination affects face recognition accuracy. When the face images are captured under uncontrolled environment, they can undergo uneven illumination due to many factors such as directional lighting, specular reflection, etc. The problem is well studied by researchers in multiple directions. We propose to solve the problem by systematically choosing a single face image as reference for computing reference probability density function and normalizing both training and test datasets of images with reference to it. We demonstrate superior performance of the proposed method and its generalization ability by conducting experiments on multiple face databases. The datasets offer challenges of varying illumination and shadows arising out of light sources placed at different angles of azimuth and elevation. We also show consistent performance of the scheme with different choices of reference images of varying illumination.

Adaptive Face Recognition of Partially Visible Faces

http://www.igi-global.com/book/cross-disciplinary-applications-artificial-intelligence/55275

December 2011

Publication/Publisher:

IGI Global Book, Cross-Disciplinary Applications of Artificial Intelligence and Pattern Recognition: Advancing Technologies

Face Recognition is an active research area. In many practical scenarios, when faces are acquired without the cooperation or knowledge of the subject, they are likely to get occluded. Apart from image background, pose, illumination, and orientation of the faces, occlusion forms an additional challenge for face recognition. Recognizing faces that are partially visible is a challenging task. Most of the solutions to the problem focus on reconstruction or restoration of the occluded part before

attempting to recognize the face. In the current chapter, the authors discuss various approaches to face recognition, challenges in face recognition of occluded images, and approaches to solve the problem. The authors propose an adaptive system that accepts the localized region of occlusion and recognizes the face adaptively. The chapter demonstrates through case studies that the proposed scheme recognizes the partially occluded faces as accurately as the un-occluded faces and in some cases outperforms the recognition using un-occluded face images.

Additional Information

TECHNICAL SKILLS:

Software Development:
Web Technologies: Java/JEE, Spring, Spring boot, Rest API, Micro services, ReactJS
Languages: R, Python, C, C++, Java, SQL
Platforms: UNIX, Linux, Windows
DBMS: MS SQL Server, Oracle, MongoDB, Neo4j, Cassandra
Big Data: Hadoop, Spark
Cloud Systems: AWS, Azure, Google Cloud Platform

Software Architecture and Design: Architecture Patterns, Design Patterns, Addressing Quality Attributes including Performance, Scalability, Availability and Security.

Project Management, Team Management (max. Team size 40), Technical enabling and Mentoring, Agile Methodologies, Stakeholders (Geographically distributed) Management, Pre-Sales and Talent Acquisition support.

Mathematics:
Linear Algebra, Probability and Statistics, 2D/3D Geometry, Calculus, Trigonometry, Linear Optimization, Convex Optimization

Machine Learning:

Techniques: Classification, Regression, Clustering, Dimensionality Reduction, Text Analytics, Deep Learning, Time Series Modeling, Optimization, Computer Vision, NLP, LLMs, Deep Learning, RNN, LSTM, CNN
Domains: CRM, Financial Services, Telecom, Biometrics, Retail, BFSI

Tools/Libraries: Matlab, libsvm, Scikit-Learn, Tensorflow, Keras, PyTorch
Stanford NLP, NLTK, Google BERT, OpenCV, GPT3, LLaMA2, LangChain
Visualization: Tableau, Matplotlib
Optimization: CPLEX

HONOURS AND ACTIVITIES:
• Excellent Performance (2nd Rank) in an Intensive Course on Computer and Network Security conducted in Infosys during July-Aug 2008
• In Dean's List for outstanding Academic Achievement (GPA 3.867/4.000) during Master of Science at University of Texas at Arlington

- Scored an average of 92% in Engineering Mathematics I to IV during Engineering