

KARTHIK NAKKEERAN

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SUMMARY

Karthik has excelled as a Data Science Researcher and Engineer, boasting two patents and two publications. His methodical approach has enabled him to thrive in demanding work settings, where he's adept at steering intricate projects. Committed to upholding exemplary work standards, Karthik leverages his expertise in Management Information Systems, Data Science, and Computer Science engineering. With over 15 years in senior roles at Abbott, SAS, and Accenture, he's proficient in Statistics, Analytics, Data Modeling, Data Mining, Machine learning, Artificial intelligence, and Predictive Modeling, with competence in GenAI and deep learning techniques.

EDUCATION

PhD Information Technology, Artificial Intelligence Emphasis

University of The Cumberlands, Williamsburg, Kentucky

(Jan 2025 – Present)

GPA 4

Master's of Management Information Systems

Spears School of Business, Oklahoma State University, Stillwater, Oklahoma

GPA 3.52

(Aug 2010 – May 2012)

Bachelor of Computer Science Engineering

Anna University, Chennai, India

(Aug 2003 - May 2007)

First Class

PROFESSIONAL EXPERIENCE

Senior Data Scientist

Abbott Laboratory, Lingo Bio-wearable

(Mar 2023 - Present)

- ✓ The research delves into the intricate analysis of Continuous Glucose Monitoring (CGM) data sourced from bio-wearable devices, necessitating advanced data processing and cleaning techniques, leveraging technologies such as Azure ML and Databricks, along with proficiency in Python programming.
- ✓ Core to the research is the identification of complex patterns and trends within CGM data, employing advanced statistical approaches and sophisticated programming methods.
- ✓ Collaborating with healthcare experts, clinicians, regulators, and doctors to ensure the data-backed approaches align with medical industry standards.
- ✓ A significant milestone in the research journey involves the development of a sophisticated sequence model utilizing PyTorch for Deep learning and AI methods, specifically engineered to detect spikes within glucose data, culminating in the initiation of patent proceedings for this innovative solution.
- ✓ The overarching goal extends to enhancing the accuracy and efficacy of Lingo bio-wearable sensors, requiring seamless integration of advanced technologies like Azure ML and Databricks, coupled with expertise in Python programming and PyTorch.
- ✓ Extracting actionable insights from CGM data stands as a pivotal aspect of the research, necessitating the application of advanced statistical approaches and leveraging the capabilities of Azure ML and Databricks.
- ✓ Ultimately, the research aims to push the boundaries of wearable health technology by pioneering cutting-edge Lingo products, empowered by advanced programming methods and statistical approaches, thereby revolutionizing healthcare management and improving patient outcomes.

Senior Data Scientist

SAS Institute Inc

(April 2022 - Mar 2023)

- ✓ The research initiative focuses on orchestrating data-driven projects aimed at advancing business interests, leveraging SAS software like Viya and Python for seamless integration and efficient data processing.
- ✓ Key tasks involve gathering and refining data from diverse sources, ensuring its quality and reliability through meticulous cleaning and collation procedures.
- ✓ Effective project management entails delegating tasks and monitoring the performance of junior data scientists to optimize outcomes and ensure project success.
- ✓ Integration of advanced statistical procedures and deep learning models facilitates the extraction of actionable insights from collected data, enhancing decision-making processes.
- ✓ Rigorous cross-validation of models ensures their accuracy and applicability across various scenarios, bolstering confidence in derived insights.

LinkedIn Profile - <https://www.linkedin.com/in/karthik-nakkeeran-a9977a5/>

- ✓ Recommendations are provided on how gleaned insights can shape and enhance business strategies, fostering greater efficiency and competitiveness.
- ✓ By integrating data-driven insights into decision-making processes, businesses can achieve operational efficiency and strategic alignment with market dynamics.
- ✓ The research contributes to the development of robust project management methodologies tailored to the data-driven era, enabling businesses to thrive amidst evolving market landscapes.
- ✓ Through systematic analysis and strategic implementation, organizations can harness the transformative power of data to drive growth and innovation.
- ✓ The research culminated in a patented methodology for image content extraction, leveraging technologies such as deep learning models, Optical Character Recognition (OCR), noise reduction techniques, and OpenCV for transforming visual data into machine-readable formats, thereby enriching datasets that can be used to build advanced visualization and modeling methods to gain valuable insights.

Data Scientist

(April 2020 - Mar 2022)

SAS Institute Inc

- ✓ This research aims to support customer analytic business needs through a comprehensive approach encompassing requirements gathering, data discovery, analysis, reporting, and presentation.
- ✓ It involves the meticulous analysis of large volumes of customer data to ensure accuracy and consistency.
- ✓ Translating business requirements into effective analytic methods is a key aspect of the research.
- ✓ Building and refining analytic models to derive valuable insights for decision-making is a central focus.
- ✓ The research also emphasizes the automation of analytic processes to streamline operations and improve efficiency.
- ✓ Development and enhancement of custom software tools play a vital role in facilitating advanced analytics.
- ✓ Additionally, the research contributes to quality assurance efforts for all projects undertaken by SAS US Professionals.
- ✓ By leveraging cutting-edge analytic techniques and tools, businesses can gain a competitive edge in understanding and serving their customers.
- ✓ This research serves as a foundation for developing innovative solutions to address evolving customer needs and market dynamics.
- ✓ Through continuous improvement and adaptation, businesses can harness the power of analytics to drive growth, enhance customer satisfaction, and achieve strategic objectives.

Technical Consultant

(Dec 2015 - Mar 2020)

SAS Institute Inc

- ✓ Deployment of SAS Demand-Driven Planning and Optimization (DDPO) system to leverage advanced analytics and seamless data integration for enhanced demand planning and forecasting accuracy.
- ✓ Utilization of DDPO for precise new product forecasting, facilitating efficient introduction and management of new products within the supply chain.
- ✓ Collaboration features embedded within DDPO facilitate seamless communication and coordination among supply chain stakeholders, improving overall operational efficiency.
- ✓ Optimization algorithms integrated into DDPO enable intelligent inventory management, minimizing stockouts and overstock situations while optimizing inventory levels.
- ✓ Implementation of DDPO represents a paradigm shift in supply chain management, offering a holistic solution for demand planning, forecasting, collaboration, and inventory optimization to drive efficiency and competitiveness.

Senior Associate Technical Consultant

(June 2012 - Nov 2015)

SAS Institute Inc

- ✓ Active involvement in the end-to-end process of analytical solution development, from conceptualization to implementation and project closeout, ensuring seamless execution and delivery at customer sites.
- ✓ Collaborated closely with sales teams to support sales activities, providing expertise and insights to address customer needs and maximize sales opportunities.
- ✓ Prioritized customer satisfaction as a key objective, striving to exceed expectations through proactive engagement and attentive service.
- ✓ Leveraged analytical skills and domain knowledge to tailor solutions to meet specific customer requirements, fostering long-term relationships and loyalty.
- ✓ Through a combination of technical expertise and customer-centric approach, contributed to the successful deployment of analytical solutions, driving business growth and enhancing overall customer satisfaction.

Graduate Teaching Assistant

(May 2011 – May 2012)

Spears School of Business, Oklahoma State University

Supervisor: Dr. Goutam Chakraborty, Professor, Department of Marketing

- ✓ Provision of instructional support in a range of SAS courses, including Data Mining, Database Marketing, Advanced Marketing Research, Business Analytics, and Contemporary Research in Management Executive Ph.D.
- ✓ Collaborative engagement with course instructors to ensure the effective delivery of course content and facilitate student comprehension.
- ✓ Demonstrating expertise in SAS software tools and methodologies to assist students in mastering essential concepts and techniques relevant to each course.
- ✓ Offering personalized guidance and mentorship to students, addressing individual learning needs, and promoting academic success.
- ✓ Contributing to the advancement of education and research in management through active involvement in teaching activities and fostering a dynamic and interactive learning environment.

Senior Programmer

(Aug 2007 - Aug 2010)

Accenture Private Limited

Client: Nokia, Finland

Project Module 1: My Nokia Web Operations Team

- ✓ Technology: Vignette – Content Management System, Site Management, HTML, JSP, Java, Servlets, J2EE, Unix, Clear Case, Web Logic Portal
- ✓ Role: Client interaction, Onsite project coordinator, liaison between client and teams at multiple demographic locations
- ✓ Application: Nokia.com/MyNokia, Web Content Management – Vignette tool
- ✓ Served as "Offshore Coordinator" in Chennai, India, leading a thirty-member team and ensuring timely delivery of web pages as per business schedules.
- ✓ Led the team as "Onsite Coordinator" in Helsinki, Finland, for a period of six months, facilitating effective communication between the client and the development teams.

Project Module 2: Nokia.com - Build and Configuration Team

- ✓ Application: Nokia.com (Maintenance)
- ✓ Responsibilities included maintenance, defect fixing, and implementing change requests for Nokia.com.
- ✓ Assumed the role of "Build Manager," overseeing server configuration, maintenance, and build and deployment of packages.

PATENTS

Techniques for image content extraction

(Published on Sep 2022)

Total Cited By (14)

Intuit Inc, Accenture Global Solutions Limited, Oracle Financial Services Software Limited, Alibaba (China) Co Ltd, UiPath Inc, Socure Inc, Hyper Labs Inc, and more.

Various embodiments are generally directed to techniques for image content extraction. Some embodiments include extracting contextually structured data from document images, such as by automatically identifying document layout, document data, document metadata, and/or correlations therebetween in a document image, for instance. Several embodiments include extracting contextually structured data from table images, such as gridded and non-gridded tables. For example, the contents of cells may be extracted from a table image along with structural context including the corresponding row and column information. Many embodiments are directed to generating and utilizing a document template database for automatically extracting document image contents into a contextually structured format. Several embodiments are directed to automatically identify and associate document metadata with corresponding document data in a document image to generate a machine-facilitated annotation of the document image. In some embodiments, the machine-facilitated annotation may be used to generate a template for the template database.

Practical Application: The described techniques for image content extraction offer a practical solution for automating the extraction of structured data from various document images, including scanned documents and tables. By automatically identifying and extracting relevant information such as invoice numbers, dates, and line items. Businesses can enrich their datasets with valuable insights from these images. This enriched data can then be used for advanced visualizations and modeling techniques to gain deeper insights into business operations, such as spending patterns, vendor relationships, fraud, and financial trends. Furthermore, by streamlining data entry processes and minimizing errors associated with manual entry, businesses can optimize their operations and make more informed decisions, ultimately driving success and efficiency.

Machine learning architecture for improved wellness monitoring

(Filed on Jan 2024)

Provisional Application was filed on January 2024

A system, method, and computer program product embodiments for a machine learning architecture for real-time medical data analysis and wellness event prediction. The architecture incorporates a trained machine learning model to predict wellness event sequences for users and various corrective features to ensure the accuracy of the predicted sequence. Real-time analysis data is inputted into the machine learning model, generating an initial sequence of wellness events. False positives, false negatives, and missed events in the sequence may be identified and used to modify the initial sequence of wellness events. The modified sequence of wellness events may be presented via a graphical user interface along with user interface elements corresponding to the wellness events.

Practical Application: An impact of this machine learning architecture is in the monitoring and prediction of wellness events. By continuously analyzing streams of glucose data, the system can predict potential spikes in glucose levels, such as those occurring after meals (postprandial events). These predictions can then be presented to patients through a user-friendly interface, providing them with insights into how their body reacts to different foods and lifestyle choices. By empowering patients with this knowledge, they can proactively adjust their behaviors, such as modifying their diet or exercise routine, to minimize glucose spikes and maintain better control over their health. Additionally, the system can identify and correct inaccuracies in the prediction sequence, ensuring the reliability of the feedback provided to users. Ultimately, this application of machine learning technology enhances patient engagement and self-management, leading to improved wellness outcomes for individuals managing diabetes.

PAPERS

Application paper on Time Series Analysis, Customer Segmentation and Profiling

SAS Global Forum 2012, Orlando, FL

Total Cited By (10)

IEEE, Engineer Application of Artificial Intelligence, Singapore Management University, Time Series Data Mining: A Retail Application, and more.

Much of the data that are generated in the operational side of a business have a built-in time dimension. One of the challenges of doing data mining using such time-series data is the complexity of handling a large number of time series. Time series clustering provides a way to reduce the complexity by categorizing a large number of time series into a smaller subset such that series within each subset are relatively homogenous but series between subsets are heterogeneous. SAS® has recently introduced new nodes for finding similarities between the time series and to forecast their future trajectories. In this paper, we demonstrate the clustering of store-level revenue over time and how profiling of such clusters generates additional business insights.

Data Standardization for Enhanced Outcomes in Cluster Analysis Using JMP

Discovery Summit 2012, Cary, NC

Data transformation plays a critical role in achieving better results from cluster analysis, a popular technique used for market segmentation. Customer survey data used for market segmentation via cluster analysis often exhibits the response styles of respondents. Response styles like acquiescence and extreme response styles can bias the results of cluster analysis. Recent research has shown that double-standardization (standardizing across both row and column) and range standardization are good candidates for eliminating response styles from dominating the cluster results, Pagolu et al. (2011). However, JMP does not provide these special standardization features. This paper shows how to achieve double standardization in JMP by using its powerful scripting language (JSL). To test if our code is working properly, we have used customer survey data from a business-to-business company in the hydraulic and pneumatic industry. A 9-point rating scale is used to measure customers' responses to questions.

SKILLS

- ✓ **Programming Languages:** Python, SQL, SAS
- ✓ **Machine Learning:** Supervised Learning, Unsupervised Learning, Deep Learning, Reinforcement Learning
- ✓ **Statistical Analysis:** Descriptive Statistics, Inferential Statistics, Hypothesis Testing
- ✓ **Data Visualization:** Matplotlib, Seaborn, ggplot2, Plotly, PowerBI, Tableau
- ✓ **Data Manipulation:** Pandas, SQL, dot
- ✓ **Big Data Technologies:** Hadoop, Spark, Hive
- ✓ **Data Engineering:** Data Warehousing, ETL (Extract, Transform, Load) Processes
- ✓ Natural Language Processing (NLP)
- ✓ Time Series Analysis
- ✓ Probability and Stochastic Processes
- ✓ **Dimensionality Reduction Techniques:** PCA (Principal Component Analysis), t-SNE
- ✓ Data Cleaning and Preprocessing

- ✓ Feature Engineering
- ✓ Model Evaluation and Validation
- ✓ Distributed Computing
- ✓ **Cloud Platforms:** AWS, Azure, Google Cloud Platform
- ✓ Optimization Techniques
- ✓ A/B Testing
- ✓ Data Mining
- ✓ **Ensemble Learning Techniques:** Random Forest, Gradient Boosting, AdaBoost
- ✓ Text Mining and Sentiment Analysis
- ✓ **Neural Networks Architectures:** CNNs (Convolutional Neural Networks), RNNs (Recurrent Neural Networks), LSTM (Long Short-Term Memory)
- ✓ Bayesian Methods
- ✓ **Optimization Algorithms:** Gradient Descent, Adam, RMSprop
- ✓ Data Governance and Compliance
- ✓ Business Acumen and Domain Knowledge
- ✓ Communication Skills: Written and Verbal Communication, Data Storytelling
- ✓ Problem-Solving Skills
- ✓ Experiment Design
- ✓ Continuous Learning and Adaptability

REWARDS / CERTIFICATIONS / TRAININGS / COORDINATION ACTIVITIES

- ✓ "Best Performer Award," "Rising Star Award," and "ASE Achiever Award," Accenture, India.
- ✓ "IT Executive Interaction Champion", Spears School of Business, Oklahoma State University.
- ✓ SAS certified BASE SAS Programmer.
- ✓ Predictive Modeling Certified Programmer.
- ✓ JMP Software: Data Exploration certified.
- ✓ Sun Certified Java Programmer.
- ✓ Udemy - Python for Data Science and Machine Learning Bootcamp (2018)
- ✓ Udemy - Python for Computer Vision with OpenCV and Deep Learning (2019)
- ✓ Udemy - Python for Time Series Data Analysis (2021)
- ✓ Generative AI, deeplearning.ai (2023)