JIZTOM KAVALAKKATT FRANCIS

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PROFESSIONAL SUMMARY

Innovative digital agriculture researcher with over 3 years of experience in machine vision and machine learning, specializing in enhancing object detection and predictive modeling. Proficient in Python, TensorFlow, and SQL, I've developed advanced algorithms and data visualization tools that significantly improved data handling efficiency and user engagement. My notable achievement includes pioneering sound-based insect detection techniques, which boosted field accuracy and precision in agricultural applications.

EDUCATION

Iowa State University **May 2025**
PhD, Computer Engineering *GPA: 3.82*

Iowa State University **August 2017 - December 2019**
Master's, Computer Engineering *GPA: 3.92*

Anna University **August 2013 - May 2017**
Bachelor's, Electrical Engineering *GPA: 7.6*

PROFESSIONAL EXPERIENCE

Iowa State University **Ames, IA, USA**
Digital Ag Graduate RA–Machine Vision/Machine Learning *January 2020 - Present*

- Enhanced detection capabilities in agri-tech applications by refining ML algorithms for image-based predictions, utilizing Python, TensorFlow, and PyTorch.
- Improved data handling efficiency by developing and implementing SQL Server data loaders and preprocessing pipelines, enhancing data processing workflows.
- Increased precision of object detection models for agricultural applications by improving models using advanced image segmentation techniques.
- Boosted user engagement and decision-making by streamlining data visualization tools, developed using Pandas and machine learning techniques.
- Published research on multivariable regression techniques by conducting and documenting advanced research focusing on Pattern-Based and Sensor Data Regression.

3M **Remote**
Data Science and Engineering Intern *May 2023 - August 2023*

- Enhanced airflow sensor testing efficiency by 15% in the Dewey Duct Project at 3M by designing and implementing innovative testing methodologies using Python and Pandas.
- Improved data pipeline accuracy for wound imagery modeling in a U-Net based project by developing and contributing to data pipelines using TensorFlow and PyTorch.
- Facilitated project ideation and execution through cross-functional team collaborations, engaging in brainstorming sessions and utilizing Agile methodologies.
- Developed a real-time sensor data visualization tool for the Wanda Vision Platform by leading the development and implementation using Python and Docker for containerization.
- Drove innovation through collaborative efforts in cross-functional team projects at 3M, delivering impactful results and leveraging Agile practices and Python scripting.

Iowa State University **Ames, IA, USA**
Engineer Designer II/ Engineer I *January 2020 - December 2020*

- Enhanced data analytics and backup efficiency by streamlining processes using Python, SQL, and Pandas, scripting automated operations to optimize data handling.
- Improved crop loss predictions by applying advanced data processing techniques using MATLAB and leveraging Python for data analysis.
- Boosted file system flexibility in research by engineering solutions for digital agriculture, pioneering VM products for ext4 compatibility and utilizing containerization with Docker.
- Developed efficient documentation and image capture by engineering GPS tagging and third-party integration through a custom Android app, leveraging Python and Google Cloud for development.
- Automated data analytics and backup protocols by designing and implementing scripting solutions, utilizing Python, SQL, and Bash to support research and enhance operational efficiency.

Iowa State University **Ames, IA, USA**
Graduate Research Assistant – Digital Ag *January 2019 - December 2019*

- Enhanced data logger functionality by pioneering Linux-based improvements for precision agriculture, integrating with diverse terrains and improving data accuracy.
- Improved object sensing accuracy in complex agricultural environments by engineering advanced vision systems using MATLAB and LabVIEW.
- Optimized data processing for advanced machinery data loggers by implementing Python scripting and utilizing Pandas for enhanced data analysis and accuracy.
- Developed scalable data solutions for precision agriculture projects by utilizing containerization and Docker for efficient deployment and management.
- Enhanced data mapping capabilities by applying Python and MATLAB to develop robust vision systems and mapping tools for varied terrains.

GE Appliances **Lafayette, GA, USA**
Fall 2018 AME Co-Op *August 2018 - December 2018*

- Improved inventory management efficiency by 30% through the creation of an embedded inventory control label using Python and containerization techniques like Docker.
- Enhanced quality assurance processes by optimizing test sequences for new product builds, utilizing TensorFlow and PyTorch for advanced testing methodologies.
- Increased accuracy of quality control systems by 25% by analyzing and improving camera testing systems, implementing data analysis with Pandas and SQL.
- Streamlined software testing workflows by meticulously testing new product builds, applying Agile methodologies, and using automated scripts with Bash and PowerShell.
- Ensured robust system performance by conducting critical quality control improvements, testing with FastAPI, and maintaining systems with Kubernetes and CI/CD pipelines.

Heilbronn University **Heilbronn, BW, Germany**
Senior Design Project Intern *February 2017 - March 2017*

- Developed a display driver compliant with ISO15118 for car charging stations by utilizing Python, EBGuide, and C++.
- Led a team in creating backend drivers for a 4th Gen Car Charging Station project by overseeing a team of three.
- Facilitated a successful cultural and language exchange program as part of an academic collaboration across universities.
- Enhanced software development process for car charging station project by implementing Python scripting and containerization techniques, including Docker.
- Improved system efficiency in backend drivers development by utilizing Agile methodologies and tools.

SKILLS

Skills: MATLAB, Adobe After Effects, Java, Android Development, AutoCAD, SolidWorks, Linux/Unix, Microsoft Azure, HTML/CSS, Git, Altium, Tensorflow, Pytorch, python, Computer Vision, RedHat, Data Analysis, C/C++, C#, Qt, Blender, Tableau, Minitab, AWS, Excel/Numbers/Sheets, Natural Language Processing (NLP), Python
Languages: French, German, Hindi, Tamil, Malayalam