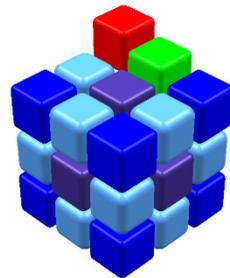


Growing Technology Frontiers in Cashew Processing

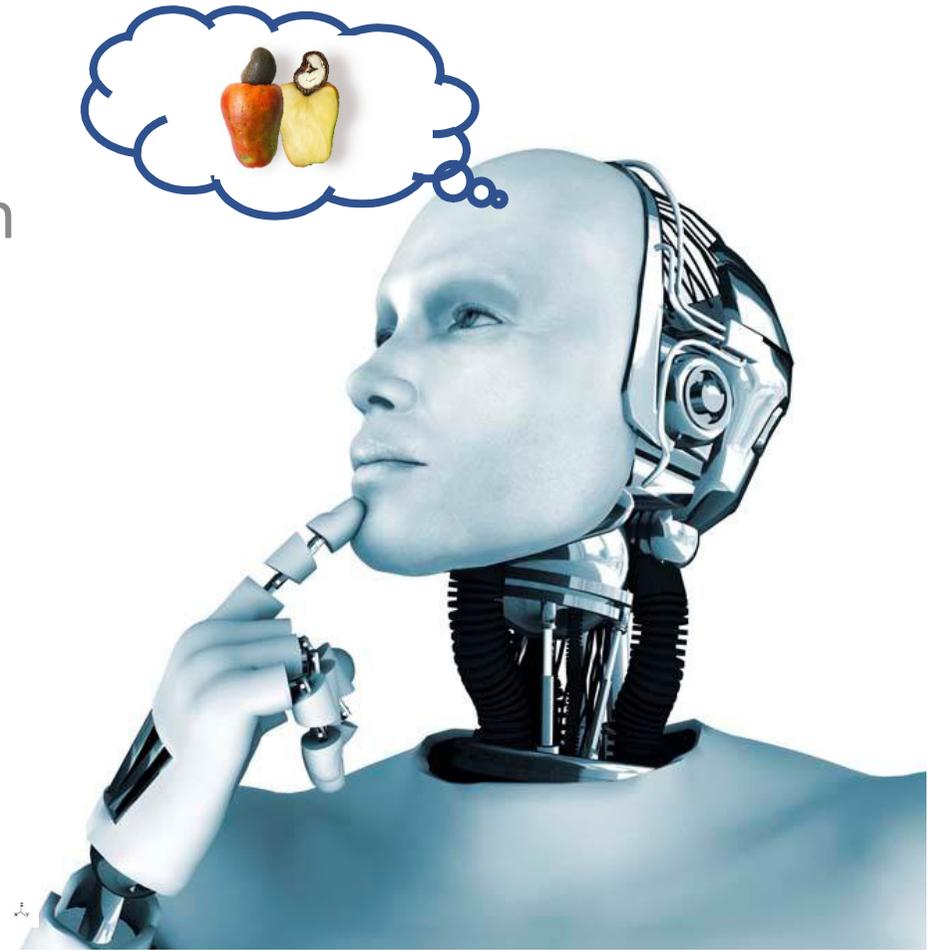
Suchithra Balasubramanian

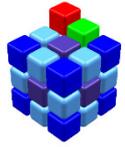
CEO, nanoPix

02-02-2018



nanoPIX





nanopiX

Technology in Cashew Industry



- Initial Step: **Mechanisation**
- Advanced Step:
- **Automation with Artificial Intelligence**
 - Internet of Things: Data Collectors
 - Image Intelligence
 - Data Intelligence
 - Machine Intelligence





Automation with Artificial Intelligence



- **Self Monitoring (Internet of Things)**
 - Self observation of machine health/condition
 - Sensing machine actions
 - **Self Identification of Problems / Issues**
 - Machine and its Inputs
 - Assimilates data of machine/processing
 - Analysis for review and improvement
 - **Auto-Correction of Observed Issues**
 - Implementing solutions and learning from it
 - Teaching Peers and collective learning
-



IoT – Data Collectors



- Data from Machines & Inputs in the Cloud
- Secure Cloud storage for Analysis

- **nanoPix Contribution**

- nanoSorter Mayur: Online Diagnostics
- Annually 3 Billion Kernel Info
- by each nanoSorter Mayur
- <http://nanopix.cloud>
secure database

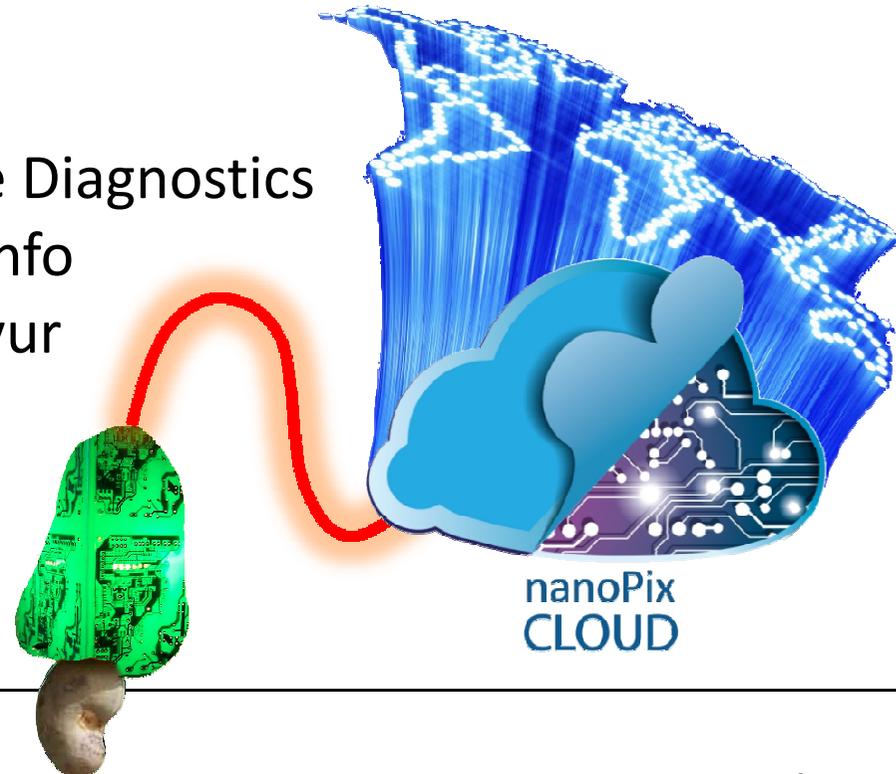
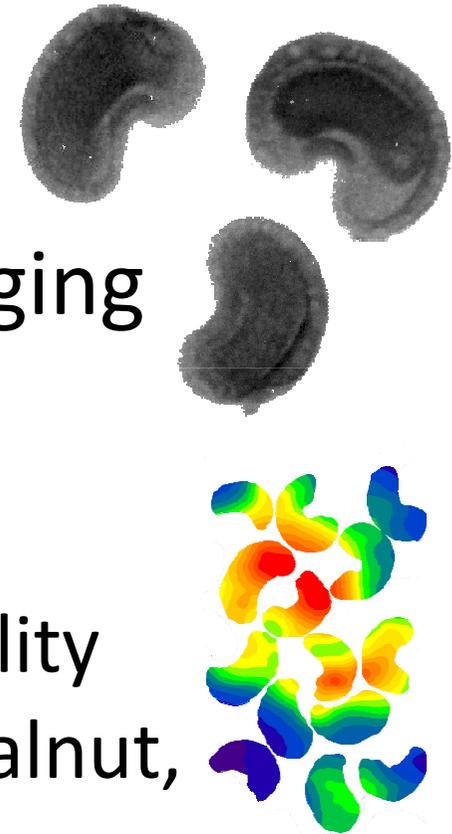




Image Intelligence



- Analysing Inputs through Vision Technology
- Far IR, X-Ray, Spectrometer Imaging
- **nanoPix Contribution**
 - Accurate Cashew Grading
 - RCN: Predict Kernel Size and Quality
 - Enhanced Usage for Almonds, Walnut, Pistachio, Arecanut etc.





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Data Intelligence



- Deep analysis of past data
- Future Prediction based on analysed results

nanoPix Contribution

Ladybird – Statistical Sample Analyser

Sample to bulk grade analysis

Human like analysis with no bias

nanoSparsh – Mobile app

Remote Monitoring and Control

Reports on performance, productivity

eNose – Taste and Flavour Detector

Composition, taste, flavor reporting

Value-add recommendation





Machine Intelligence



- Machines perform tasks after thinking
 - Able and Informed Decision Making
 - Act as Proxy and Answer questions
 - Customer Engagement & Order Management
 - Self Learning and Peer to Peer Learning
 - **nanoPix Contribution**
 - **Teja:** Machine learning to adjust counts/grades
 - **nanoKiosk:** Letting consumers choose what they want
 - **nanoloT:** Integration of Boiler, Deshelling, Borma, Peeling, Grading and Packing machines
-



AI for Cashew



- Efficient Faster Processing, Grading
- Intelligent Cleaning >> Food Safety Compliance
- Reduce wastage during Processing
- Food Composing – Intelligent Recipes
- Drone: Farm Inspection, Pollination
- **Benefits: AI for Cashew**
 - **Higher Productivity, Efficiency**
 - **Accuracy and Repeatability**
 - **Very High ROI**



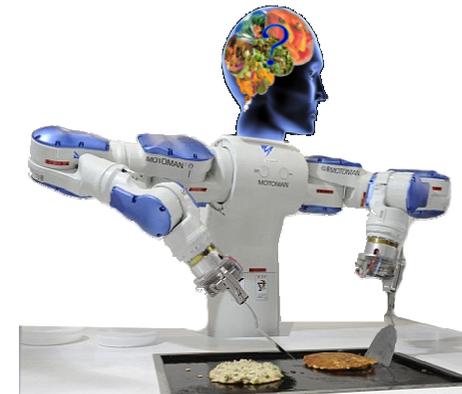
AI in Food Industry Global Perspective



- WEF2018 – AI in Food was a topic of discussion
- 2017 Global AI Investment \$5B (India \$170M)
- Nearly 17% invested in food sector (Europe)
- AI expected to increase Revenue **39%** by 2020

Akshya Patra: Largest Mid-day Meal Program

- Using AI for process control/analysis
- Target capacity hike 50% using AI
- Accenture Lab Partnership
- Tech4Good Initiative





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Advanced Steps - AI

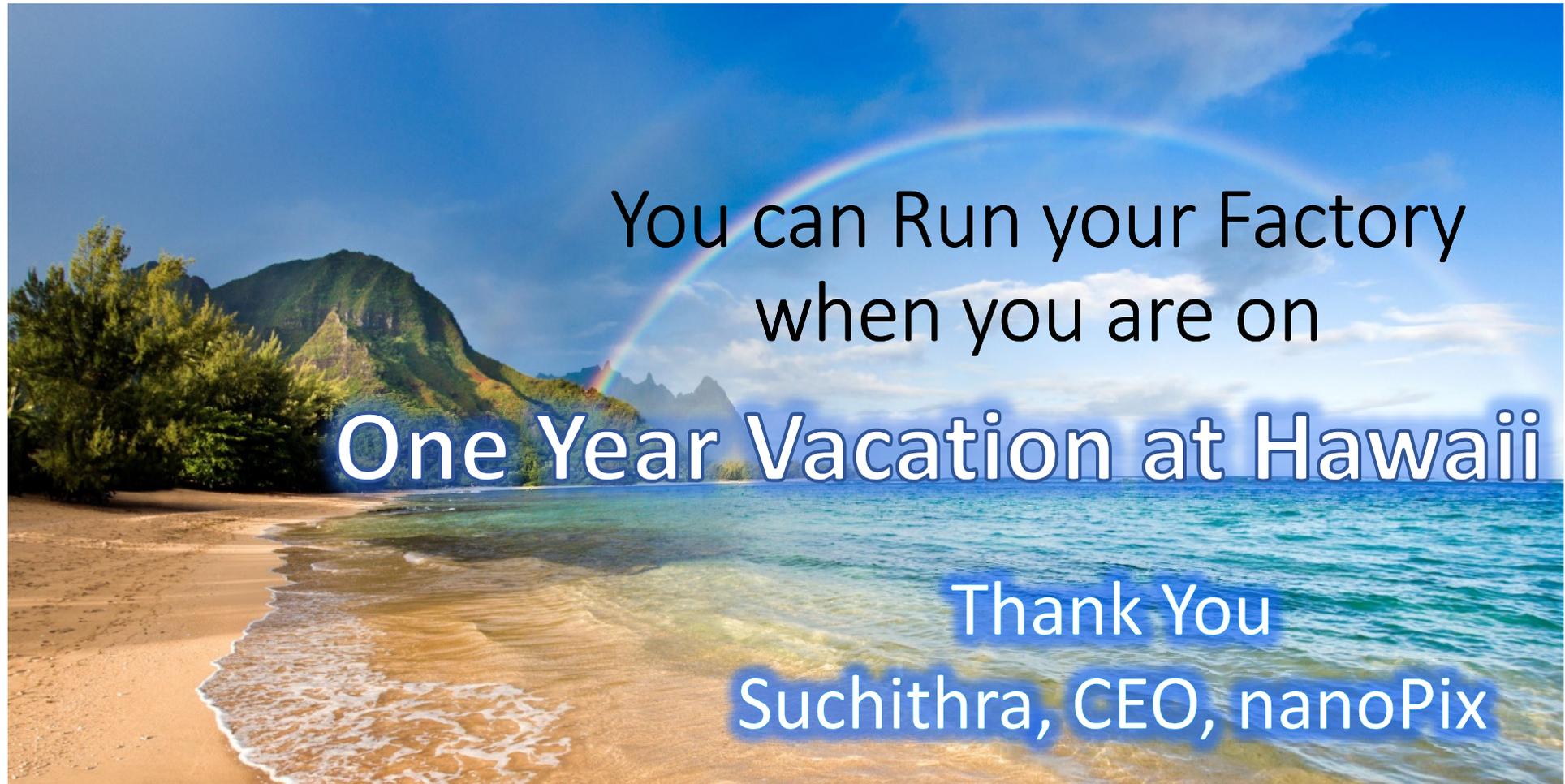
Summary



Technology	Usage	Industry Focus
Image Processing	Grading	AI based high speed accurate grading
IOT	Connect All Machines	Cloud based secure data
Data Intelligence	Analysis & Forecast	Analytics for decision making
Machine Learning	Peer to Peer Machine Learning, CRM	Automatic Performance Improvement, Effective Customer Engagement



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