TECHNICAL SKILLS

- Innovation and Product Management
- Full Stack Web Application Development
- C, C++, Python
- ROS, LabVIEW
- CAD Modelling, PCB Designing
- Digital Manufacturing

LANGUAGES

- English - IELTS -7
- Tamil

HONORS AND AWARDS

- Awarded Best Startup Idea by Government of Gujarat at 'Vibrant Gujarat Startup Summit'18
- INSPIRE Awardee by Department of Science and Technology, Government of India

CONTACT

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KALAISELVAN THANGARAJ

GRADUATE MECHATRONICS ENGINEER

HERE'S MY STORY:

Highly motivated individual with strong background in Mechatronics engineering and a year of work experience as Incubation Associate at Forge Accelerator

WORK EXPERIENCE

INCUBATION ASSOCIATE

FORGE ACCELERATOR
JULY 2019 - PRESENT

- Working with early stage startups on Product Innovations and accelerate their progress for seed funding
- Working with Industries on Sponsored Co-creation and open innovation projects
- Core team member in managing graduate diploma in hardware/AIOT course at Forge Accelerator.

INTERNSHIP IN MANAGING PRODUCT INNOVATIONS

FORGE ACCELERATOR
JANUARY 2019 - JUNE 2019

- Managing Product acceleration of hardware startups
- Customer discovery and development
- Equip startups for winning grants & investments
- Market study and competitor analysis
- Business model design and Business plan generation

FELLOWSHIP IN HARDWARE/AIOT PRODUCT DESIGN AND ENGINEERING

FORGE ACCELERATOR
JUNE 2018 - DEC 2018

A 20 week fellowship program for skills and competency development that provides Innovation centric approach to Engineering education

Developed Skills In

- Applied design thinking
- App development and android things
- Automotive electronics
- Electronic system design
- MUP design, development and deployment
- IP fundamentals

EDUCATIONAL INFO

KUMARAGURU COLLEGE OF TECHNOLOGY

B.E MECHATRONICS ENGINEERING
2015 - 2019

- Robotics Engineering
- Signals and systems
- Dynamics of machinery
- Industrial automation
- Machine vision system

PROJECTS

1. INDIVIDUAL PROTECTION SYSTEM FOR INDIAN SOLDIERS

A smart light-weight body armour providing enhanced protection, situational awareness and improved communication for soldiers in battlefield enabled by the Internet of Battlefield Things (IoBT). A bio-inspired armour design & material was coupled with advanced sensors and communication modules for safety of the soldiers.

We interviewed 14 Indian Army Officials to hear the *Voice of Soldiers* and understood technical requirements, deployment constraints etc,. based on which a product concept was developed, engineered a prototype and tested in-field. The problem statement was part of Innovation for Defence Excellence [iDEX], an open innovation program by Ministry of Defence

Technology: e-Textile, Embedded systems, Bio sensors, IoT, LoRaWAN for communication, Battery Management

2. WILD ANIMALS INTRUSION DETECTION SYSTEM

An Advanced animal activity detection system that enables Forest Department, Wildlife NGOs,etc., to plan and mitigate loss of life and damages to properties due to human-animal conflicts through early warning systems by recognizing the threat potential of the animal. The system use advanced AI based classifiers and low power communication methods which make it viable for deployment in remote locations.

This idea was pitched to WWF chapter of Tamilnadu, the idea gained high traction within the department owing to application of advanced technologies. WWF has expressed interest to support pilot deployment and orders upon successful trials. Myself along with a team of innovators are now closely working with Forest Rangers and Officials to develop and deploy this solution in reserved forests distinctively in Western Ghat ranges of Tamilnadu.

Technology: LoRaWAN, CNN, RPi, Machine Vision

3. AUTOMATED TENSILE STRENGTH TESTING MACHINE

Developed an automated tensile strength testing machine for rubber products manufacturing industry. This product eliminates the manual labour involved in measuring the load at the point of failure during the test by integrating the load cell to a single board computer. The system collects data and visualises it according to the type of rubber.The product was deployed at a industry and tested.

Technology: RPi, Python, Web App

4. SMART POPCORN VENDING MACHINE

IoT enabled smart popcorn vending and popping machine, that allows customers to choose fresh-popped flavoured popcorn. A unique package was designed to hold popcorn kernels for this vending machine. It is integrated with unified payments interface (UPI) and sends reports such as availability of popcorn packs and usage statistics of the machine

Technology: Cloud computing and IoT

5. AUTOMATED QUALITY CONTROL SYSTEMS

A machine vision system developed to identify cracks and surface deformities in automobile components was developed. This system reduces the cost of operation and labor dependency in the QC department of manufacturing industries. An unique lighting method was developed to capture images of glossy metal surfaces which where complemented by a specialized machine vision algorithm to detect defects.It was deployed and tested in a horn manufacturing company [Roots], where the manual QC inspection of horn contactor was automated.

Technology: LabVIEW, Machine Vision

6. HAND HYGIENE MONITORING SYSTEM FOR HOSPITALS

One of every 10 patients acquire hospital acquired infections due to the lack of hygiene practices in hospitals. Hospitals do not strictly follow regulation norms and other legal rules and hence face the danger of losing their accreditation. To solve a small part of this problem, we built a hand wash monitoring system. This system tracks the steps of the hand wash procedure and logs them for every staff. This system was prototyped and was tested internally.

Technology: Jetson Nano, Machine vision, Power BI, BLE, LoRaWAN, CNN

OTHER PROJECTS

- Autonomous frisbee throwing robot
- Autonomous shuttlecock throwing robot

ORGANISATIONAL / MANAGERIAL SKILLS

SOFTWARE AND HARDWARE HACKATHONS

- Was part of the team that organised world's largest hackathon [Smart India hackathon 2019] by the Government of India
- Was part of the organisation team that ran hackathons for corporate [HackWare for Schneider Electric]

FELLOWSHIP PROGRAM at FORGE

Core team member in managing graduate diploma in hardware/AIOT course at Forge Accelerator. My key responsibility areas include managing product innovations from customer discovery to prototype deployment of many student teams and to teach master classes in relevant technologies

WORKSHOPS

- Conducted skill development workshops in creative fabrication and in Robotics
- Conducted workshops in alexa skill development and in Robotics
- Conducted train the trainer program for professors in python programming
- Conducted workshops in customer discovery, value crafting and product design

OTHER NOTABLE WORKS

- School Pupil Leader
- Lead of College Robotics Team
- Organiser at Yugam [College Techno-cultural Event]
- Organised National Level Hardware and Software Hackathons