

# Siri Venkata Krishna Sainath Konakalla

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## PROFILE

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I am a full-time first-year Master of Applied Science student at Carleton University. Experienced in software management as well as hardware systems with a keen interest in the Autonomous systems field and possess strong core concepts in Aerospace & Mechanical engineering.

## EDUCATION

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Carleton University, ON, Canada September 2020 – Present

- **Master of Applied Science (MASc) in Aerospace Engineering**
- GPA – 6/6 (Fall term), Coursework - Uninhabited Aircraft Systems, Nanomaterials, Introduction to Autonomous Mobile Robots, Smart Materials & Structures.

Jawaharlal Nehru Technological University, Kakinada, India September 2013 – April 2017

- **Bachelor of Technology (BTech) in Mechanical Engineering**
- CGPA - 9.13/10 equivalent to 3.88/4 (verified by WES)
- Related courses include - Advanced Mechanics of Materials, Design of machine & automobile components, Machine dynamics, Applied Thermodynamics, Heat transfer, Refrigeration & Air conditioning, Fluid mechanics, Hydraulic & Pneumatic systems, Advanced Manufacturing processes, Material science & metallurgy, Finite element method, Computer-aided design & manufacturing, Basic Electronics Engineering, Electrical Technology, and Robotics.

## SKILLS & KNOWLEDGE

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### Technological Skills

- Programming knowledge - Python3, C++, Data analysis, Machine learning, MATLAB (basic to intermediate)
- Expert in Industry-standard 3D CAD modeling software - Solidworks, CATIA, Siemens NX, AutoCAD 2D
- Engineering Simulations knowledge - ANSYS Mechanical, ANSYS Fluent
- Microsoft Office (Word, Excel, PowerPoint), Adobe creative suite (Premiere Pro, Illustrator, Photoshop)

### Laboratory Knowledge

- Strength of materials, Fluid mechanics, Modelling & Simulation
- Electrical & Electronics, Heat transfer, Design & metrology
- Fuels & IC engine, Machine tool, Computational methods, Computer-Aided Design & Manufacturing

## WORK EXPERIENCE

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Lineysha and Thevan Software Technologies Pvt Ltd, India Dec 2019 - March 2020

### Robotic Process Automation Engineer - Internship

- Involved in the development of a software management system and process automation of the Route Relay Interlocking (RRI) system for South Central Railways and was responsible for hardware testing.

South Central Railways, Indian Railways, India June 2019 - November 2019

### Mechanical Engineer - Internship

- Supervised regular maintenance of Diesel locomotives, LHB coaches, tested Air-braking systems (advanced pneumatic disc brake system). Coordinated repair & inspection activities (Intermediate overhauling every 9 months). Examined bogie frame, bolster for cracks, damages, and corrosion. Tracked route relay interlocking systems for the safe operation of trains.

CADD Centre Training Services Pvt Ltd, India May 2018- December 2018

### Diploma in Product design - Full-time student

- Completed training in 3D Cad modeling software such as Solidworks2017, Catia V5 R20, Siemens NX CAD10 and gained hands-on experience with projects.
- Experienced in assembly modeling, drafting, sheet metal design, FEA analysis, and machining simulation.
- Gained basic knowledge on Surface modeling, Bill of materials, Geometric dimensioning & tolerancing.

Graduate Aptitude Test in Engineering (GATE), India May 2017 - March 2018

### Student

- Appeared for all India Mechanical engineering examination and ranked among the top 7%.

## PROJECTS/PUBLICATIONS

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### **Optimal Path Planning for Autonomous Mobile Robots in Indoor environments**

Jan 2021 – Present

Individual Project (ongoing)

- Optimal path length to the destination location with faster convergence while maintaining stable robot posture on uneven surfaces and avoiding obstacles is the primary goal. To achieve higher accuracy in autonomous navigation a combination of a rapidly exploring random tree (RRT) and the Harris hawk's meta-heuristic algorithms would lower computational time, produce paths closer to optimal paths and the robot will start navigating sooner.

### **Active Polymer-based Flexible Tactile Actuator & their application in Humanoid Robots**

Jan 2021 - Present

Team Project – 4 members (ongoing)

- Identified the reality, potential, and challenges with artificial muscle to mimic mammal muscle movements and functions such as self-sensing, self-repair, durability, temperature regulation, and efficiency. Understood the requirements, the current status of research for flexible tactile actuators specifically the Dielectric Elastomer Actuators (DEAs); Twisted & Coiled Polymers (TCPs) for humanoid robot applications are reviewed.

### **Identifying Forest Canopy Gap Pattern Using Drones to Aid in Harvesting Site Selection**

Sept 2020 - Dec 2020

Team Project – 3 members

- Utilizing UAV technology for data acquisition enhances the operation productivity, lowers equipment costs for harvesting site selection. The project presents a complete UAV design right from the motor, propeller, and battery selection suitable to a particular mission. Orthomosaic maps were analyzed & addressed the practical forestry gap to ensure that forest regrowth is at the forefront of every harvesting operation.

### **Nanotechnology in Solar Cells – Die-Sensitized Solar Cells (DSSCs)**

Sept 2020 – Dec 2020

Team Project – 4 members

- The objective was to introduce the Die-Sensitized Solar cells as low-cost alternatives to conventional amorphous silicon solar cells owing to their simplicity in the bulk fabrication process, easy integration with the grid, and smaller overall size with similar solar efficiency. Furthermore, presented the ways of improving DSSCs efficiency.

### **Structural Analysis of a Bolted Nozzle Flange (Saturn V Rocket Model)**

Jan 2019 – March 2019

Individual Project

- The main objective was to assess the margin of safety of the flange bolts. Built a nonlinear finite-element model to analyze bolted nozzle assembly. Modeled contacts, thermal strains, and gas pressure. Interpreted results for deformation, stress, bolt pre-tension, contact gaps. Studied sensitivity to the key input parameters. Finally verified model with hand calculations

### **Finite Element Analysis of Bike Crank**

Feb 2019 - March 2019

Individual Project

- The objective was to develop a solution of bike crank to calculate the deformed shape, displacement field, and stress distribution. Developed a static structural model with boundary conditions in Ansys mechanical. Interpreted the results and verified the model by refining mesh. Compared results with the experimental setup and digital image correlation.

### **Investigation of Material Removal Rate (MRR) on Mild steel – using Taguchi Technique**

Dec 2016 - March 2017

Team Project – 5 members

- Siva Prasad, K., S V K Sainath, K. and Vijay Kumar, B., 2017. Investigation of Material Removal Rate on Mild Steel–using Taguchi Technique. International Journal of Engineering Technology Science and Research, [online] 3(5). Available at: <[http://www.ijetsr.com/images/short\\_pdf/1495551394\\_nittr964\\_ijetsr.pdf](http://www.ijetsr.com/images/short_pdf/1495551394_nittr964_ijetsr.pdf)>.

## CERTIFICATIONS

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- Introduction to Applied Machine Learning
- Machine Learning Algorithms: Supervised Learning Tip to Tail
- Data Analysis with Pandas and Python
- Complete Python3 Bootcamp
- ENGR2000X: A Hands-on Introduction to Engineering Simulations
- Diploma in Product Design

## **VOLUNTEER**

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Velagapudi Ramakrishna Siddhartha Engineering College, India

October 2015 - February 2016

### **Fundraising and Marketing Volunteer**

- Assisted a team of 5 in raising 25% of funds for Annual Cultural & Technical Fest by engaging with individuals, local businesses, and promoting cultural diversity within the community.

National Service Scheme (NSS), India

June 2014 - September 2016

### **Event Organizer**

- Organized International Yoga day, Blood donation & Medical camps, Swachh Bharat & Tree plantation programs for 864 fellow students to create awareness, and planned events well ahead of time.

## **MEMBERSHIP**

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- American Institute of Aeronautics and Astronautics (AIAA) Student Membership - 1146532 August 2020 - Present
- Royal Aeronautical Society (RAeS) Student Affiliate Membership – 3044583 August 2020 - Present