SUDHARSHAN RAMESH

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EDUCATION:

- **Master of Science, Mechanical Engineering** | University of Colorado Boulder ***Expected May 2025***
  Courses: Advanced Product Design, Mechatronics and Robotics, Advanced Robotics, Feedback Control, Advanced Linear Systems, Robust Multivariate Control, Micro-Electro-Mechanical Systems, Practical Electronics Systems
- **Master of Science, Computational Analytics** | Georgia Institute of Technology ***Expected May 2025***
  Courses: Intro to Analytical Modelling, Computing for Data analysis, Deterministic Optimization, Computational Data Analytics, Deep Learning, Reinforcement Learning and Decision Making, Data & Visual Analytics, High Dimensional Data Analytics
- **Bachelor of Technology, Mechanical Engineering** | National Institute of Technology, Warangal ***May 2021***
  Courses: Basic Electronic Engineering, Mechatronics, Engineering Mechanics, Kinematics and Dynamics of Machinery, Design of Machine Elements, Computer Aided Manufacturing, Production Planning and Control

SKILLS:

- **Software & Tools**: SolidWorks, ANSYS, Python, MATLAB, Arduino, Raspberry Pi, ROS2, AWS, LabVIEW, Ignition SCADA HMI Development & OPC UA Integration, CODESYS, OpenPLC, Siemens PLC SIM, Allen-Bradley PLCs, TwinCAT, SPI, I2C
- **Concepts:** Machine Learning, Control Systems, PCB Design, Mechanical Design, Data Analysis, IoT, Model Predictive Control
- **Skills:** Creative thinking, Innovative, Time Management, Analytical, Collaboration, Adaptability, Detail-oriented

WORK EXPERIENCE:

IDFC First Bank ***Oct 2022 – Jul 2023***
Data Scientist, Credit Cards *Mumbai, India*

- Developed an ARIMA-based forecasting model in Python, achieving a <1% average deviation in predicting monthly credit card expenditure and balances, significantly supporting strategic growth initiatives.
- Implemented an XGBoost Classifier to categorize credit card accounts into optimal APR tiers, improving revenue by 25% through enhanced risk analysis.

Axis Bank **Aug *2021 – Oct 2022***
Data Analyst, Liabilities Acquisition *Mumbai, India*

- Engineered a projection framework with a 0.3% average deviation, accurately forecasting month-end savings account balances and driving strategic financial planning through deep trend analysis, contributing to revenue growth in savings account acquisition by 30%.

Wheels India Pvt. Ltd ***Jun 2019 – Jul 2019***
Intern – Research and Development, Air Suspension Division *Chennai, India*

- Engineered and optimized air suspension system for heavy-duty trucks, focusing on load distribution dynamics and system reliability, for an OEM, achieving a 20% improvement in load-bearing performance.
- Monitored and analyzed structural testing procedures and production line operations, gaining insights into advanced manufacturing processes, robotics automation, and stringent quality control standards.

PROJECTS:

- **Autonomous Battle Bots Robot** | Arduino, C++, SOLIDWORKS, 3D Printing
  - Developed a winning autonomous combat robot using Arduino and PIXY vision sensor for target detection, high-torque actuators for mobility, and real-time motor control, achieving 90% shooting accuracy.
- **Autonomous Pet Bot** | Raspberry Pi, Arduino, ROS2, Python, SOLIDWORKS, 3D Printing
  - Engineered a robotic pet with sensor-driven navigation, multi-actuator mobility, and ROS2-based integration, utilizing LiDAR and RealSense camera for sensor fusion and Kalman filtering to enhance localization (SLAM), gesture recognition, and autonomous mapping.
- **SAE India Efficycle** | SOLIDWORKS, ANSYS, Finite Element Analysis
  - Engineered the steering mechanism and system for a hybrid vehicle, collaborating within a team of 8 to ensure seamless integration of components and working using prototyping and engineering principles to design and FEA to validate integrity.
- **UR5 robotic arm manipulation** | MATLAB, Inverse Kinematics
  - Automated the testing process for pneumatic actuator performance using a 6-axis UR5 robotic arm, equipped with a load cell to measure force at various actuator positions by implementing inverse kinematics algorithms to control the UR5 arm's movements and optimize the precision of force measurements.
- **Quad Rotor Dynamics with Wind Gusts** | MATLAB, PID control systems
  - Designed and a PID and Model Predictive Control based trajectory control system for a quadrotor drone, enhancing trajectory tracking under wind disturbances and achieving a 40% boost in stability metrics using MATLAB Simulink.
- **Raspberry Pi-based Conveyor Belt Automation** | Python, Modbus, SCADA
  - Designed a PLC-style control system using a Raspberry Pi to automate a conveyor belt for object sorting, integrating Modbus communication with a SCADA dashboard for real-time monitoring and control.
- **Lunar Lander RL Control System** | Python, OpenAI Gym, DQN, DDPG
  - Developed RL-based control for lunar landing, optimizing stability and fuel efficiency using DQN & DDPG and achieved a 215.49 average reward over 100 episodes, adapting to wind and turbulence conditions.
- **Pneumonia Detection with Deep Learning** | Python, PyTorch, CNNs
  - Built an ensemble of ResNet-18, DenseNet-121, and GoogLeNet for pneumonia classification, achieving 85% accuracy.