Tirth Gadhvi

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EDUCATION

California State University(CSULB) - Long Beach, CA — May 2021
Master of Science in Mechanical Engineering — **GPA: 3.22**
(Major: Robotics,Automation & Control)

Ahmedabad University - Gujarat, India — May 2018
Bachelor of Technology in Mechanical Engineering — **GPA: 3.25**

EXPERIENCE

- **Graduate Research Assistant, CSULB** — **Jan 2020 - Present**
  - Modelling Robotic Dynamics in MATLAB, Simulink and Python
  - Theoretical formulation of motion planning and control of robots in CARLA(C++)
  - Design , Simulation of algorithms such as Hidden Markov Model(HMM), Viterbi Algorithm in MATLAB, Python and CARLA for Sensor Fusion
- **R&D Mechanical Engineering Intern - FormFactor Inc, San Jose** — **June - Aug 2019**
  - Involved in realization of engineering designs for integration of a new architecture for FormFactor's next-generation product.
  - Accumulation of experimental data utilizing advanced tools like Tribology & Mechanical testing machines and Scanning Electron Microscope (SEM).
  - Data analysis using statistical analysis tools such as MATLAB and JMP, writing a technical report and producing training documentation for internal use.
- **Teaching Assistantships, Ahmedabad University** — **Aug 2017 - May 2018**
  - Control System Design and Renewable Energy Technology
- **Student Intern - Oil and Natural Gas Corporation Limited** — **May - July 2017**
  - Increased efficiency of combustion involving crude oil and natural gas for optimizing the following:
  - Group Headers, Centrifugal and Jockey pumps, Heater Treater, Pressure Filters, Heaters, Clari Focculator, DenStark Method, Scrubbers, Gas coolers, Flash Mixers

TECHNICAL SKILLS

- **Programming Languages:** Python , C/C++, Arduino IDE, JAVA, JavaScript, Justinmind (App/Web Development),ROS
- **Tools:** SolidWorks, AutoCAD, HyperWorks, Arduino, MATLAB, Simulink, OpenSim,Tableau,TableauPrep, IBMSPSS
- **Courses:** Control System Design, Robotics, Modern Control of Dynamic Systems,Introduction to programming languages,Introduction to Computer Science and Programming Using Python, Optimization Methods, Mechatronics, Control of Mobile Robotics, Robot Modeling and Control, User Centered Design, Finite Element Analysis, Non Linear Control and Applications, Calculus and Differential Equations, Computer Aided Design and Manufacturing, Design of Machine Elements, Biomechanics of human movement

PROJECTS

- **Robotic Sorting System** — **Jan - May 2019**
  - Devising Autonomous strategy for tracking and re-positioning through Sensor Fusion resulted increase in efficiency by 4% .
  - Experimentation with Denso operated using MATLAB for relocation and OpenCV in Python for Real time feedback.
- **Classical Double Inverted Pendulum** — **Aug - Dec 2018**
  - Modeling of the system with Lagrange equations in Simulink. Unstable double inverted pendulum is linearized around the equilibrium point and stabilized using Optimal-control techniques.
  - Linear Quadratic Regulator and Riccati Equations were used in MATLAB for stabilizing and control the Linear systems at the equilibrium point.
- **Collision Avoidance** — **Jan - May 2018**
  - Developed collision avoidance strategy in MATLAB and C/C++ using A* algorithm with Optimization techniques. Fabricated autonomous robot by 3D printing specific parts for experiments.
  - OpenCV (Computer Vision toolbox) was used for real time tracking of autonomous robot in test-bed. Strategy for Automatic Storage and Retrieval System(AS/RS) was formulated.
- **Sun and Planetary Gear Box Mechanism** — **Aug - Dec 2017**
  - Increased efficiency of gear trains through transforming motion by adapting velocity, torque and direction of movement.
- **Dual-Axis Solar Tracker** — **Jan - May 2017**
  - Formulated inexpensive framework in Simulink(C++) for the solar panels and fabricating the prototype using Arduino-platform(C/C++,Java). Sensor Fusion was in core with LDR diodes, Stepper and Induction motors for economic design.
- **Stepper Motor Drive System** — **Jan - May 2016**
  - Designed torque and RPM of Steeper Motor to increase torque to current ratio. Fabricated Stepper motor utilizing iron nails and Ball bearings. Torque control was established through current variation with Arduino IDE(C/C++)