DA WANG

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➢ SUMMARY

- Strong background in mechanical & system design with specialization in Robotics, incoming California Mechanical **PE** license.
- Proficient in **CAD modeling** packages (**5+**yrs) by Solidworks, ProE, Inventor and **FEA Validation** by Abaqus, Hypermesh.
- Deep understanding of **Quality Engineering** with Six Sigma DMAIC theory, root cause analysis, Gage R&R and SPC control.
- Hands-on experience of C++ Object oriented programing with **ROS Framework** in Gazebo simulation, SLAM, path planning.

➢ EDUCATION

May '17	**Mechanical Engineering (MME.)**,	Rice University, Houston, TX	GPA:3.74/4.00
May '15	**Mechanical Engineering (B.S.)**,	University of Nottingham	GPA:3.76/4.00
Relevant Courses:	*Robotics, Dynamic systems & control, Mechatronics, Solid mechanics, CAD Design, Thermodynamics*		

➢ EXPERIENCE

Mechanical Engineer, ***Fannin Innovation Studio***, *Houston, TX* *Jan '17 – May '17*

- Contributed to the mechanical system design for an MRI-compatible and intervention-capable surgical robot-GuidaBot which provides an accurate and rapid (75% time saving) needle placement in target tissues using real-time MRI trajectory planning.
- Developed 3D model and 2D sketch layouts for SMT (solid-media transmission) system, slide-rail mounting equipment, and sheet-metal test stage with 2x2 DOE theory to achieve balanced and low-friction performance using **Autodesk Inventor Fusion360** conforming to DfM and DfA and ASME Y14.5 – 2009 GD&T guidelines for SLA 3D printing and injection molding.

Engineering Manager, ***Nouveau Elevator Industries, NY*** *Jun '17 – now*

- Perform the engineering solutions and the project management of for over 20+ jobs of modernization and new construction elevators and escalator from pre-engineering consultation to final installation in Tri-state area.
- Carry out walk-through survey, lay out construction plans with AutoCad under ANSI/ASME A17.1 compliance, revise markups and annotation for the use of DOB filing, and create rendering plan of cab design and other mechanisms using Inventor.
- Design 3D models for parts and assemblies under GDTP-2009 tolerance & dimensioning and manufacturing (Sheet metal, 3D printing, injection molding,). Perform Reaction/Impact Calculations and FEA Stress Analysis for machine beam structures, pit buffer for elevators and escalators to check the feasibility is with appropriate safety of factor.
- Coordinate and manage projects actively with various suppliers and general contractor to keep the projects on schedule.

Robotics Software Engineer,

SLAM Navigation and Path Planning for A Home Service Robot **(**Capstone Projects) June '19 – Aug'19

- Programmed a home service robot that will autonomously map an environment and navigate to pick up and deliver objects with the shell-script launch files of localization, slam mapping (slam_gmapping) and path planning algorithm.
- Prototyped a mobile robot using URDF file to describe the links, joints, sensors (RGB Cameras) and appropriate drive controllers (skid_ or diff_) in Gazebo simulator and the building environment with Buidling Editor Plugin.
- Set pickup and dropoff zones and wrote c++ nodes to communicate with ROS Navigation stack which is based on Dijkstra's algorithm, a variant of Uniform Cost search algorithm, to publish successive messages to plan the robot trajectory
- Modeled a virtual object with markers in Rviz to interface with robot when robot picks up and drops off and wrote the add_make.cpp node to subscribe the odometry to keep track of the robot pose.

FEA Validation Engineer, ***Rice University, TX*** Sep '16 – Dec'16

- Conducted CAE modeling and analysis on automotive powertrain design for lightweight and safety performance with HyperMesh, ABAQUS and FEMFAT in 4 sub-projects about mass reduction, deflection, fatigue and crack.
- Generated meshes for powertrain parts in HyperMesh, applied specific material properties, contact and load steps to FEA model and optimized 30% mass reduction plan for transmission flanges and hubs by results generated in ABAQUS.
- Calculated the pinion slopes based on ABAQUS deflection results, evaluated stress and deformation levels for pinion carrier under specific shift loadings.
- Performed fatigue analysis for gear shaft lubricant holes using FEMFAT to get safety factors under certain cycle number.
- Built Impeller hub welding model in ABAQUS and evaluated crack performance with J-integral to improve weld plan.

Mechanical Engineer, ***Rice University***, *Houston, TX* *Feb '17 – May '17*

- Invented a color-oriented and force-triggered 4-DOF FANUC robot to grab objects using computer vision.
- Mathematically analyzed the Forward/Inverse kinematics by DH-method and simulated motion cases in Matlab and ROS.
- Built HW and SW system with Arduino microcontroller board to collect data from potentiometers and implement linear feedback control to guide the trajectory planning for the robotic manipulator to reach and stay in the desired positions.
- Using OpenCV and used Visual Studio to carry out color detection for the robotics to achieve object recognition capacity.

➢ Skills & Certificates

- Software: Creo Parametric(Pro/E), SolidWorks, UGNX, Autodesk Fusion, ABAQUS, HyperMesh, FEMFAT, Matlab Simulink, Labview, Arduino, ANSYS, ROS (Gazebo), C/C++ VS, CES Material Selection.
- Other Certificates: Six Sigma Black Belt (MSI), LEED AP (GBCI), Udacity Nanodegree – Robotics, Intro to Self Driving