**Shiva Kumar Poloju**

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**Objective**

Passionate mechanical engineer seeking full time opportunities in Computer-Aided Engineering (CAE) Domain with keen interest in electric vehicle design, analysis, meshing and scripting applications.

**Education**

**Masters certification program in Hybrid electric vehicle design & analysis**. (Jun 2019 - Present)

**B.Tech, Mechanical Engineering, Kakatiya University**, Warangal, India, (70%) (May 2019)

**Course Projects**

**Pre-processing of BMW M6 model using ANSA for external aerodynamic analysis, Skill-Lync**

* Performed symmetry, translation, rotation & scaling option under Transform Tool.
* Performed Surface mesh checks & learnt Surface mesh checks manager.
* Used Quality criteria tool & learnt various options under the shell parameters such as Skewness, Wrapping, Min length, Max length, Max angle & Min angle, etc.
* Eliminated the errors such as Penetration, proximity, skewness, and min & max lengths using various tools.
* Set-up Wind Tunnel for External Aerodynamic Analysis.

**Pre-processing of hood assembly for structural analysis using ANSA, Skill-Lync**

* Cleaned all the Topological Errors.
* Extracted the Mid-surface.
* Meshed the HOOD for Structural Analysis with Target Element size of 5mm.
* Created a Virtual Hemming model in ANSA.

**Geometry clean-up, surface & volumetric meshing of a turbocharger using ANSA, Skill-Lync**

* Gained experience in various creation/manipulation features and meshing in a tool ANSA.
* Worked on various manipulation tools to clean topological errors common in CAD modelling.
* Triangular linear first order surface mesh created.
* Tetrahedral volume elements created for volumes inside the Turbo-Charger feasible to perform CFD Analysis.

**Surface wrapping of power train components (engine, transmission & gear-box) using ANSA, Skill-Lync**

* Worked on various manipulation tools to clean topological errors that are common in CAD modelling.
* Performed Surface wrap on Engine, Power Transmission, and Gearbox models individually with the given element size and then deleted the geometry.
* After Surface, wrapping, merged all the models in to a single common file and then separated each PID is in the model browser and compressed the file.
* Deleted the intersection wall between the merged models to share a single volume.

**Advanced CFD meshing of IP substrate model for structural analysis using ANSA, Skill-Lync**

* Performed Clean up.
* Extracted the Mid-surface.
* Assigned PID & Thickness.
* Meshed the model for Structural analysis.
* The mesh elements corrected to meet the quality criteria.

**Optimization of a stalagmite function using genetic algorithm to find global maxima in MATLAB, Skill-Lync**

* Wrote a code to get an optimized value.
* Found global maxima.
* Got the accurate value using GA (i.e. by increasing the no. of iterations).

**File parsing of NASA's thermodynamic data using MATLAB, Skill-Lync**

* Read the data from the file.
* Extracted the 14 coefficients and to calculate the Enthalpy, Entropy, and Specific heats for all the species in the data file.
* Calculated the molecular weight of each species.
* Plotted the CP, Enthalpy and Entropy for the local temperature range (low temperature: high temperature) specific for each species.

**Simulation of transient behavior of simple pendulum using python, Skill-Lync**

* Wrote a program, which solves the following ODE. (I.e. ODE represents the equation of motion of a simple pendulum with damping).
* Wrote a program to simulate the transient behavior of simple pendulum and create an animation of its motion.

# Breaking Ice with Air cushion Vehicle - Find minimum pressure with Newton-Raphson method, Skill-Lync

* Wrote a program in PYTHON, which calculates the minimum pressure, required to break the given ice using an Air cushion Vehicle by Newton Raphson Method.
* Plotted the graphs of (Pressure vs Thickness) & (Relaxation factor vs Iterations).
* Calculated the optimized value.

**Academic projects**

**Design and Fabrication of Manually Operated Rice Transplanter (Kakatiya University, Nov 2018 - April 2019)**

* In this project, I have implemented the simple four bar linkage mechanism, which I have studied in kinematics of machinery in my academics during my graduation.
* It is a manually operated (hand) Rice transplanted, which reduces the time effort to a maximum extent as compared to Existing Trans planters.
* Manufacturing cost also very cheap.
* It gave scope of applying my theoretical knowledge into a practical application.

**Internship**

**Boilers and its Accessories (NTPC, Ramagundam, May 2018 - June 2018)**

* Throughout this internship, I have gained knowledge on working process of boilers and its accessories in Thermal power plant.
* It also gave me an Industrial Exposure on how the thermal power plant works actually.

**Study of Power pack Assembly (Diesel loco-shed Kazipet Division, South Central Railway, July 2017 - Aug2017)**

* In this internship, I have gained knowledge on Power pack assembly of locomotives, especially about the Engine, which is the prime source of mover in locomotives.
* It gave practical exposure of how actually the diesel- locomotive works.

**Extra-curricular / Leadership Activities**

* Participated and worked as a Volunteer in Automotive workshop on Different types of Engines held in my College.

**Software Packages**

* Modelling: SolidWorks, CATIA V5
* Computational Analysis: MATLAB, PYTHON, ANSA.