Sudip Karmacharya

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EXPERIENCE

Mechanical Designer Intern | KA Imaging   May 2020 - Aug 2020
- Tracked and updated the product design requirement verification tests, for X-ray detector using Jira and Confluence.
- Evaluated 4 test facilities for product verification tests considering cost and distance from the facility.

Mechanical Engineer (Dynamic Analysis) Intern | Curtiss-Wright   Sep 2019 - Dec 2019
- Developed and executed battery tests for helicopter docking and handling systems, expediting the project and saving the company 3+ million dollars.
- Designed the next generation of the helicopter docking systems test rig using Creo, accelerating the project by 4 months.
- Evaluated Simulated and analyzed the dynamics of a helicopter docked on a ship deck for 50,000+ cases at various sea and wind conditions in order to determine safe landing and securement conditions, using Batch and a proprietary software.

Mechanical Designer Intern | Besnovo   Jan 2019 - Apr 2019
- Updated an existing cable management system for an Automated Guided Vehicle (AGV) using SolidWorks.
  - New design was 25% cheaper, 50% smaller, 40% lighter and had a 100% increase in the cable capacity.
- Conducted five FEA tests and a fatigue test to optimize weight and stress levels resulting in at most 40% reduction in weight, using SolidWorks Simulations.
- Reduced cable entanglement which can lead to catastrophic failure of the laser de-coating system by 40%, through the development of a mechanical interface, constructed using sheet metal, for a smoother cable travel using SolidWorks.

Unmanned Aerial Vehicle (UAV) Designer Intern | University of Waterloo   Jun 2018 - Aug 2018
- Spearheaded design process to create 50+ metal, plastic and composite parts, expediting the project by 2 months.
- Conducted FEA tests on metal and plastic assemblies using SolidWorks Simulations to optimize weight and stress levels, decreasing the weight by up to 15%.

3D Print Centre Engineering Assistant Intern| University of Waterloo   Sep 2017 - Dec 2017
- Drove a manufacturing project to 3D print +400 parts in a week using Stratasys Fortus 360mc FDM 3D printers, after losing 50% of the total production capacity.
- Ensured project success by developing a risk mitigation plan and implementing it by directing a team of 10+ which included professors, IT department, a 3rd party diagnostic team, and teaching assistants.

EDUCATION

University of Waterloo| Bachelor of Applied Science in Mechanical Engineering, Honours   Sep 2016 - Apr 2021
- GPA: 3.7/4.0

SKILLS

Tools: SolidWorks, Creo, CATIA, MasterCAM | Abaqus, ANSYS | MATLAB, Python (Pandas and Matplotlib)
Fabrication Methods: FFF/FDM 3D Printing, SLA 3D Printing, CNC Machining, Laser Cutting, Mills, Lathes

Projects

Fourth Year Design Project: Arctic Aeroponics System   Sep 2020 - Present
- Directed mechanical design process to create 50+ parts and assemblies for extreme weather conditions (-58 deg F and 53 mph wind) using SolidWorks, while enforcing DFM and DFA principles
- Analyzed the structure of the systems at 3 wind conditions, increasing the force needed to tip over the system by 20%
- Optimized weight of various critical parts to remove excess material while maintaining acceptable stress levels using FEA.
  - Conducted H-refinement and P-refinement to select the mesh size of 5 mm and to select quadratic elements.
  - Decreased the weight of the parts by up to 90% though design iteration, using Abaqus CAE and SolidWorks

Unmanned Aerial Vehicle (UAV) Designer Intern | University of Waterloo   Sep 2017 - Dec 2017
- Ensured Pre-processed raw data: converting object to integers, standardization, feature scaling and data-splitting.
- Trained and validated Linear Regression and Decision Tree Regression models in order to choose the best model.
- Implemented the best model, resulting in the model predicting the validation set with an accuracy of 94.4% using Python.