Sudip Karmacharya

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Education

University of Waterloo — *Waterloo, Canada*
Candidate for B.A.Sc in Mechanical Engineering, Honours — *Sept. 2016 - Exp. May 2021*
- Cumulative **GPA of 3.7/4.0**
- University of Waterloo Additive Club, Mech Peer Mentorship Program Mentor

Work Experience

KA Imaging — *Waterloo, Canada*
Mechanical Designer — *May 2020 - Aug. 2020*
- Designed, and created CAD models and drawings of the new generation of X-ray detectors using SolidWorks
- Tracked, and updated tests and product design requirements for the next generation X-ray detector in Jira and Confluence
- Evaluated different test facilities to conduct verification tests for products based on various factors including cost and, distance from our facility

Curtiss-Wright Defense Solutions — *Mississauga, Canada*
Mechanical Engineer (Dynamic Analysis) — *Sept. 2019 - Dec. 2019*
- Simulated and analyzed the dynamics of a helicopter docked on a ship deck at various sea and wind conditions using Numerical Analysis
- Organized, developed and conducted tests for the implementation of new batteries for the helicopter docking and handling system; ensured that the product reached the specification required within deadline, **saving over 3 million dollars**
- Generated CAD models, assemblies and drawings of the next generation helicopter docking systems test rig using Creo

Besnovo Inc. — *Ajax, Canada*
Mechanical Designer — *Jan. 2019 - Apr. 2019*
- Redesigned the existing Cable Management System to supply power to the Automated Guided Vehicle (AGV)
  - New design was **25% cheaper**, **49% smaller** and **38% lighter**, with a **100% increase** in the cable capacity
- Conducted Finite Element Analysis tests on various parts and assemblies to optimize weight and stress levels
- Created CAD models, assemblies and drawings of systems of varying sizes using SolidWorks
- Integrated various large components onto a 6-meter-long Automated Guided Vehicle, ensuring safety and urgency

University of Waterloo — *Waterloo, Canada*
Unmanned Aerial Vehicle (UAV) Designer — *June 2018 - Aug. 2018*
- Designed various parts and assemblies using SolidWorks and AutoCAD, with a focus on **Design for Manufacturing**
- Used various fabrication methods, namely: laser cutting, machining and, FFF/FDM and SLA 3D printing
- Conducted Finite Element Analysis tests on various parts and assemblies to **decrease the weight by up to 15%**

Projects

Arctic Aeroponics System — *Sept. 2020 - Present*
- Developing an arctic growing system to provide nutrition for three people, tackling food insecurity in north Canada
- Responsible for mechanical product design, Finite Element Analysis (using Abaqus) and control system implementation
  - Conducted Finite Element Analysis tests on various parts to **decrease the weight by up to 90%**

Predictive Machine Learning Model for 3D Printing Material — *Jun. 2020 - Aug. 2020*
- Performed data pre-processing including 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 model, resulting in the model predicting the validation set with an **accuracy of 94.4%**

Skills

- **Fabrication Methods:** FFF/FDM 3D Printing, SLA 3D Printing, CNC Machining, Laser Cutting, Mills, Lathes
- **Analysis Tools:** Abaqus, ANSYS FEA, Machine Learning
- **CAD/CAM:** SolidWorks, Creo, CATIA, AutoCAD, MasterCAM
- **Programming Languages:** MATLAB, Python, G-code, C++, C, Octave
- **Interests:** Painting, Soccer, Reading Books, Chess, Making Tiramisu