AAKARSHAK DASS

Toronto, Ontario, M1K 3S6 (**Open to Relocate**) • 647-461-9827 • akdass028@gmail.com
Website Portfolio • Youtube Channel • LinkedIn Profile

SUMMARY

An electromechanical engineering technology graduate seeking for a job with more than 7 years of practice in 3D mechanical CAD designing and a thorough understanding of PLC programming in various platforms (Allen Bradley, Siemens, Omron), and a in-depth knowledge of microcontrollers, quality control using vision inspection.

EDUCATION

Centennial College, Canada **Jan, 2023-April, 2024**
Advanced Diploma (Electromechanical Engineering Technology - Robotics and Automation)

- Designed and built an obstacle detection vehicle integrated with robotic arm for minor project.
- Developed a **2d Pen Plotter** using **Arduino** in major project.
- Gained in-depth knowledge of **servo card** and implemented in building the card.
- Used **ABB ROBOTSTUDIO** to program various robot simulations such as **pick and place**, **color sorting**, **2D and 3D pallet stacking**.
- Used the knowledge of **HMI and PLC programming** for **maintainence** and **troubleshooting**.
- Analysed **fluid power** and **pnuematic systems** using the principles of **fluid mechanics** and **dynamics**.

Guru Gobind Singh Indrapastha University **August, 2017-June, 2021**
Bachelor of Technology (Mechanical Engineering)

- Design and assembled a wheelchair mounted mechanical arm as major project.
- Gained an thorough knowledge of **fluid dynamics**, **strength of materials**, **kinematics of materials**, **robotics**, **theory of materials**.
- Written 2 research papers based related to **FEA Analysis** and **Fluid Dynamics**.
- Made multiple projects using **Catia V5**, **SolidWorks**, and **AutoCAD** and **Blender**.
- Acquired a detailed knowledge for the working of **Ansys**, and the **principles and laws** of **CFD** and **FEA Analysis**.

SKILLS

3D Modelling and Mechanical Engineering

AutoCAD Mechanical | **Catia V5** | **SolidWorks** | **SolidEdge** | **MATLAB** | **Finite Elemcent Analysis (FEA)** | **Computational Fluid Dynamics (CFD)** | **Blender** | **GD&T** | **Surface Design** | **Lathe Machining** | **Drill and Milling Machining** | **Bill of Materials (BOM)**

Programming and Electrical | Robotics and Automation

Python | **Arduino** | **Soldering** | **HTML & CSS** | **PLC Programming (Allen Bradley, Siemens, Omron)** | **ABB RobotStudio** | **Fanuc RoboGuide** | **AutoCAD Electrical** | **OpenCV** | **PyGame** | **Matplotlib** | **NumPy** | **Pandas**

WORK EXPERIENCE

STUDENT RESEARCHER
Centennial College (Contract Base - 3 months)

- Worked with a research team for designing hydrogen refueling station.
- Designed multiple parts of station such as refueling nozzle, check valve, safety valve, breakaway.
- Softwares used for designing the components were Catia V5 and SolidWorks.
- Assembled the whole station according to the Canadian standards for each components of refueling station.
- Rendered the gas station and hydrogen dispenser station with the help of Blender.

RESEARCH PAPERS

Fundamental Of Fluid Dynamics For The Spread Of Covid — Published | View PDF
International Journal For Technological Research In Engineering — Volume 8, Issue 5, January-2021

Design and Analysis of the Wheel Mounted Mechanical Arm using CATIA V5 — Published | View PDF
International Journal For Technological Research In Engineering — Volume 8, Issue 11, July-2021

INTERNSHIP (CO-OP)

P.K. Panchal - Machine Tools
Delhi, IN

- Gained experience in using **milling machine**, **grinding machine**, **drilling machine**, and **lathe machine**.
- Assisted in manufacturing multiple mechanical components using these machines.

Ranjit Welding Works
Delhi, IN

- Acquired knowledge of **hobbing machine** to manufacture different types of gears such as, **helical gear**, **spur gear**, and **worm gear**.
- Contributed in designing gears using **proper calculations** for gears and applying these calculations for manufacturing the gears.

POST SECONDARY PROJECTS

Wheelchair Mounted Robotic Arm - Major Project (Bachelor of Technology)
Aim: The principle objective of this project was to finish important activities using a wheelchair-mounted mechanical arm for manipulation. Additionally, tasks which were done by the arm were "Holding water glass or bottle"," Opening doors" ,"Operating switch" and "Turning pages often book."

Softwares: **Fusion 360, Catia V5**

Obstacle Detecting Vehicle with Robotic Arm - Minor Project (Centennial College)
Aim: The objective of the project was to pick up an object in shortest time period, and detect all types of obstacles in front of the vehicle.

Software:
Catia V5, Solidworks, Arduino IDE, AutoCAD
Electronic Components:
Bluetooth Module, Servomotor, DC Motor, Power Supply, Fuse, Ultrasonic Sensor, Buck Converter
Microcontroller: **Arduino**
Result: The design helped us to complete **100m back and forth** and **grab the cup and reach the start line** in just **32.1** seconds.

2D Pen Plotter - Major Project (Centennial College)
Aim: The main purpose for this project was to help architects, engineers and other industries in creating drawings and texts quickly and economically. Small businesses and firms can make profit by using this plotter as it is easy to operate and very cheap.

Software: **Catia V5, Inventor, Arduino, AutoCAD**
Electronic Components: **Arduino Uno, Stepper and Servo Motors, CNC Expansion Module, Motor Driver, LCD Display, E-stop & Push Buttons, Arduino Nano, Cooling Fan, Limit Switches**
Microcontrollers: **Arduino Uno and Arduino Nano**

HMI Diagnostics Project (Centennial College)
Project Requirement:

- Complete a particular sequence using HMI display and programmed in **Omron**.
- We designed 5 different screens each for various operations, such as operating, **maintenance**, production, and errors.
- We also programmed two signals light which would indication if there is an error or not and if the station is running or not.

PROJECTS (View Online)

Catia V5 and SolidWorks Projects

1. Robotic Arm
   - Robotic Arm is a electro-mechanical arm which is used for different areas of industry such as medical, automation, manufacturing, etc.
   - The project was design using the features in part design and assembly design workbenches.
   - Features used were Pad, Edge Fillet, Groove, Hole, Mirror and Circular Pattern.
2. Drone Design
   - Unmanned Aeriel Vehicle (UAV), also known as drones, are controlled by humans or programmed in a software.
   - The project was design using the features in part design and assembly design workbenches.
   - Features used were Pad, Edge Fillet, Groove, Hole, Plane.
3. Globe Valve
   - Globe Valve is an instrument used to control the flow of fluid.
   - The project was design in part, generative surface design workbenches.
   - Features used in this project were chamfer, pad, pocket and formula
4. Refueling Nozzle
   - This nozzle is used to refuel the hydrogen fuel into the car engine.
   - The project was designed in part design, surface design workbenches using chamfer, pad, groove, pocket tools.
   - The design prevented the nozzle to freeze when refueling the vehicle.

AutoCAD Projects (3D and 2D)

1. 3D CPU Fan
   - These fans are used to cool down the processor by pulling in the air and sending it to heating component (CPU).
   - The project was design in 3D Modelling workbench of AutoCAD.
   - Tools used were offset, surface associativity, edge fillet, presspull.
2. 3D Impeller
   - This is a rotating component of centrifugal pump which send the fluid outwards.
   - Commands used were line, divide, rotate, extrude.
3. 2D Anchor
   - The project was design in 2D design workbench.
   - Command for this projects were used in this project were chamfer, pad, pocket and formula
4. 2D Form Roll Lever
   - Designed in 2D drawing workbench.
   - Commands Used for Line, Circle, Mirror, Ray, Offset, Match Properties

Blender Projects (3D Modelling and Product Animation)

1. Spider Robot
   - Used animation and grass effects.
2. Sci-Fi Environment
   - Used Depth of Field and animation.