Mohammad Ghadri

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Previously at **Airbus**

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Summary

- **Airbus**, Mechanical Engineer Intern.
- **Mechanical Engineering**, MSc & BSc, Ranked **3 out of 79** among all BSc graduates.
- **Machine Learning & Deep Learning Expertise**:
    - **Airbus project**: Deployed Machine Learning models to evaluate and optimize A220's buoyancy for emergency water landings, conducted simulations for 17 scenarios ensuring prolonged floatation and safe evacuation, and validated results with a trusted tool in use since 2008.
    - **Self-Driving Car project**: Developed an autonomous vehicle system using YOLOv4, Darknet, Python, and OpenCV, showcasing my ability to integrate Deep Learning with mechatronics for real-time object detection.
- **Projects**: Conducted **64** projects for 31 courses using 9 software and 5 coding languages.

Industry Experience

Internship 3: Summer 2023 | Mechanical Engineer at **Airbus**

- Deployed Machine Learning models to assess the A220 buoyancy and accommodate any changes in specifications to ensure its effective performance in emergency water landings (ditching).
- Developed simulations to investigate 17 different ditching scenarios assuring A220 would remain afloat for an adequate duration, allowing passengers and crew to evacuate into lifeboats safely.
- Validated the developed model with the last tool, which has been in use since 2008.

Internship 2: Summer 2020 | Mechanical Engineer at Pishgam Daghigh Sazan (PDS)

- PDS was a startup with 20 employees. Some of my duties included assisting the founder and CEO, handling technical issues, and negotiating with the company's customers and key partners.
- Worked in the tooling workshop.
- Assisted Production, Marketing (Advertising, Selling, Delivering), and After-sales Services processes.

Internship 1: Summer 2019 | Mechanical Engineer at Bidboland 1 - Gas Processing

- Assisted the engineers in the technical office with double-checking the data collected by the technicians.
- Visited various sites of the refinery to observe the practical application of theoretical knowledge as part of the internship benefits/contract.
- Took the HSE workshop as part of the internship benefits/contract.

Education

MSc | Mechanical Engineering | 2021 – 2023 | Concordia University, QC, Canada.
BSc | Mechanical Engineering | 2017 – 2021 | Shahid Chamran University of Ahvaz
Ranked **3 out of 79** among all BSc graduates.

Mechanical Engineering Background

- **Real-Time Object Detection for Self-Driving Cars**
  - Crafted an integrated solution for autonomous vehicles, blending mechatronics and deep learning.
  - Employed YOLOv4, Darknet, Python, and OpenCV to engineer a proficient real-time object detection system.
  - This project underscores my adeptness in harnessing deep learning for contemporary tech challenges.
    - Course: Advanced Mechatronics Course (Master's Level)
    - Project Title: Self-Driving Car
    - Programming Language: Python
    - Method: YOLOv4
    - Goal: Real-Time Object Detection for the Cars

- **BSc Specialized Project**:
  - Simulated Friction Stir Welding (FSW) using DFLUX subroutine and coupled Eulerian-Lagrangian methods.
  - Used ABAQUS to analyze heat transfer, temperature distribution, stress, and strain at the tool and workpiece during the FSW process.
    - Title: "Simulating Friction Stir Welding (FSW)"
    - Software: ABAQUS
    - Methods: 1. DFLUX Subroutine, 2. Coupled Eulerian-Lagrangian (CEL)
    - Goal: Heat transfer, temperature distribution, stress, and strain analysis at the tool and workpiece during the FSW process.

- **Selected course projects**:

Course	**Project's title**
Heat Transfer	Link, Heat Exchanger Temperature Analysis
Fluid Mechanics	Link, Centrifugal Pump Velocity Analysis
Automatic Control	Link, AUV Controller Design
Mechanics of Materials	Link, Truss Bridge Stress and Strain Analysis
Design of Components 1	Link, Shaft Torsional Stress and Strain Analysis
Technical Drawing 1&2	Link, Clamp Mini Bench Vice Modeling
Introduction to Tribology	Link, Hertzian Contact Stress Calculator

Mechanical Engineering Skill Set

Engineering Software:	○ SOLIDWORKS	○ ANSYS	○ ABAQUS	○ Simulink
	○ Arduino	○ MSC Adams	○ PSIM	○ Tecplot
Programming Skills:	○ Python	○ C++	○ R	○ MATLAB
	○ FORTRAN	○ Java		
Office Software:	○ Microsoft (Word, Excel, PowerPoint, Visio)		○ Google (Docs, Sheets, Slides)	
Operating Systems:	○ Linux	○ Windows		

Data Science Background

Delved deeply into Data Science since 2021, guided by industry-leading experts. Their LinkedIn Recommendations on my behalf serve as testimonials of my Data Science capabilities:

- Hamid Shojaei: PhD, Senior Data scientist consultant at Excelacom, USA.
  "Over the last few years, I have taught Mohammad machine learning algorithms, Deep Learning, Time Series forecasting, and advanced Python, and R programming. He not only pays attention to the details but also has a bird-eye view of the concepts, which makes him very capable of joining any machine learning project. On his journey toward becoming a data scientist, Mohammad is highly motivated, organized, and focused."

- Mostafa Mohammad Rezaee: Data Science PhD Candidate, Bowling Green State University, USA.
  "As part of our collaboration since 2021, Mohammad and I worked together to collect and organize valuable code examples and Machine Learning concepts to be used later in our projects. As a result, he now has a solid background in Data Science, including Machine Learning, Deep Learning, Data Mining, Visualization, STAT, Python, and R."

Machine Learning Skill Set

Skills	Selected programming languages and Libraries
Machine Learning	scikit-learn, caret
Deep Learning	TensorFlow, PyTorch, Keras, caret
Python	Python, Pandas, NumPy, Statsmodels, datetime, ipywidgets, math, GeoPandas, fastparquet
R	R, dplyr, caret, ggplot2
SQL	MySQL, PostgreSQL
Visualization	Matplotlib, Seaborn
Editors	Google Colab, JupyterLab, Jupyter Notebook, VS Code, PyCharm
Git	Git, GitHub, GitLab
Image Processing	OpenCV, Pillow, scikit-image
Time Series Analysis	TSA, Statsmodels, ARIMA, SARIMA, LSTM
Package Manager	Conda, Venv, Docker

Honors and awards

2017-2021	Graduate with honor (BSc), ranked as **3 out of 79** Mechanical Engineering students.
2017	Ranked as **top 5%** out of **148**,**429** applicants in centralized **nationwide** university entrance exam.
2005-2017	For **12 years** (K-12), I was an honored student.