





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:
 - o 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.
 - o 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

- o Crafted an integrated solution for autonomous vehicles, blending mechatronics and deep learning.
- o Employed YOLOv4, Darknet, Python, and OpenCV to engineer a proficient real-time object detection system.
- o This project underscores my adeptness in harnessing deep learning for contemporary tech challenges.

o Course Advanced Mechatronics Course (Master's Level)

o Project Title Self-Driving Car

Programming LanguageMethodPythonYOLOv4

o 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.

o Title "Simulating Friction Stir Welding (FSW)"

o Software ABAQUS

o Methods 1. DFLUX Subroutine, 2. Coupled Eulerian-Lagrangian (CEL)

o 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
Design of Components 1

Link, Truss Bridge Stress and Strain Analysis
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: o SOLIDWORKS o ANSYS o ABAQUS o Simulink

o Arduino o MSC Adams o PSIM o Tecplot

Programming Skills: o Python o C++ o R o MATLAB

o FORTRAN o Java

Office Software: o Microsoft (Word, Excel, PowerPoint, Visio) o Google (Docs, Sheets, Slides)

Operating Systems: o Linux o 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:

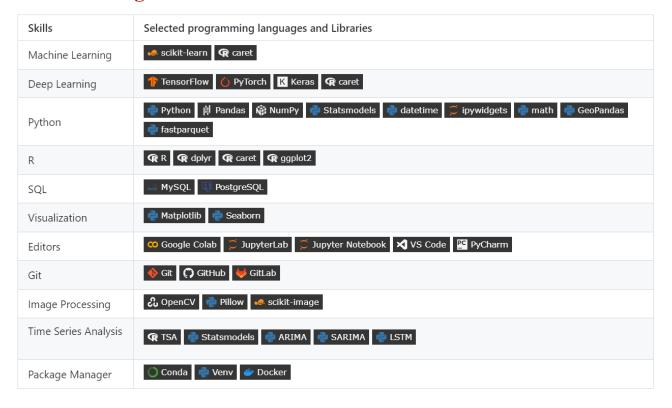
• Hamid Shojaei: PhD, Senior Data scientist consultant at Excelacom, USA.

"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



Honors and awards

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