

DORNA SABET

Edmonton, Alberta, Canada

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- Computer vision and machine learning researcher with **4+ years of experience** developing and validating high-performance models on complex, real-world datasets
- Hands-on experience across **object detection, segmentation, facial-expression analysis**, and **camera calibration** pipelines
- Strong background in **designing, implementing, and evaluating deep-learning models** for image and video understanding using **2D and 3D data**
- Proficient in **Python, C++, OpenCV, and PyTorch** for research and production-level development
- Experienced in rigorous **model evaluation, benchmarking, and validation**
- **Willing to relocate**

EDUCATION

University of Alberta, Edmonton, AB, Canada

Sep 2023-Jan 2026

Master of Science, Mechanical Engineering (GPA: 3.9/4.0)

Khajeh Nasir University of Technology, Tehran

2018-2022

Bachelor of Mechanical Engineering (GPA: 3.78/4.0)

SKILLS

Skills: Python, C++, MATLAB, Git, OpenCV, PyTorch, TensorFlow, Keras, Scikit-learn, CUDA, Opensim, Catia

PROFESSIONAL EXPERIENCE

IDEA Lab, Edmonton, Canada

Sep 2023-2025

Graduate Research Assistant

Deep Learning-Based Markerless Motion Capture for Quantifying Balance in Rehabilitation.

- Evaluated the accuracy, reliability, and clinical validity of multiple **markerless pose-estimation models** (MediaPipe, DeepLabCut, OpenPose) for balance-related rehabilitation tasks.
- Collected and curated a multi-view motion dataset from 30 participants with diverse anthropometrics to support training and benchmarking of markerless **pose-tracking models**, resulting in biomechanically accurate models.
- Developed and refined **multi-view camera calibration** pipelines, leveraging checkerboard-based and feature-based methods, enabling accurate **3D reconstruction**.
- Making a pipeline for benchmarking markerless motion-capture outputs against gold-standard systems (Vicon) using established rehabilitation metrics and statistical validation **across 90+ hours of recorded data**.
- Investigated **LSTM-based sequence models** for anatomical landmark estimation, training temporal models to infer 3D body landmarks from image sequences.
- Mentoring multiple undergrad students

SYMO startup, Tehran

2021– 2022

AI Researcher

- Designed and implemented computer vision models for clothing detection and segmentation, supporting virtual try-on and online fitting-room applications.
- Implemented **object detection** and **segmentation** pipelines using YOLO and Fast R-CNN, incorporating custom post-processing workflows to improve accuracy and robustness on real-world datasets.
- Fine-tuned **image classification** models for automated categorization of men's clothing products.
- Led dataset preparation and annotation strategies and built evaluation pipelines on a dataset of 5,000+ images, ensuring data quality and reliable model performance.

Programming Intern

- Programmed and integrated behavioural modules for SoftBank's Pepper robot, with a focus on human-robot interaction workflows.
- Assessed face detection models deployed on SoftBank robotic platforms and analyzed real-time performance.
- Gained hands-on experience in robotics software development, computer vision integration, and robot behaviour programming within real-world robotic systems.

PROJECTS**Smart-Derm: Skin Lesion Detection System**

Sep 2024-June 2025

- Investigated CNN-based classification models for early identification of skin abnormalities.
- Developed an Android mobile application integrating the trained models to enable on-device lesion detection and classification.

KinArm Simulator Using YOLO

Sep-Dec 2023

- Built a low-cost KinArm robot simulator using YOLO **object detection** and **OpenCV**.
- Created interactive rehabilitation-style games controlled with tracked hand movements.

Deep Vision Models for Automatic Emotion and Arousal Detection. (BSc Thesis)

Sep 2021-Sep2022

- Implemented and evaluated convolutional neural networks (VGG, ResNet) for facial feature learning and affect/arousal prediction.
- Applied GAN-based data augmentation to increase dataset diversity and improve model generalization under limited-data conditions.

Sleep Stage Classification Using EEG Signals with Neural Networks.

Sep 2022

- Analyzed deep learning models to classify four sleep stages from EEG signal.
- Examined CNN-based and Transformer-based architectures for temporal feature extraction.
- Performed signal preprocessing to assess classification performance across sleep stages.

Steel Defect Segmentation

June 2022

- Compared the performance of U-Net and FCN-8 architectures for the **segmentation** of steel defects.

Deep-utils Python Library

Aug 2021

- Partnered on deep-utils, a Python library for deep learning research, with a focus on visualizing feature maps and intermediate representations during model training.

QUALIFICATIONS**Awards:** *Alberta Innovates Scholarship*, University of Alberta Graduate Recruitment Scholarship**Activities and Training:** NatIgnite Hackathon, Leadership of self and others Workshop, Lab2Market Discover**Language:** English, Persian(Fluent) - French (Beginner)**Professional Memberships:** EIT, APEGA (application under review)**PUBLICATIONS & PRESENTATIONS**

- D. Nourbakhsh Sabet, M. R. Zarifi, J. Khoramdel, Y. Borhani, E. Najafi, "[An Automated Visual Defect Segmentation for Flat Steel Surface Using Deep Neural Networks](#)," International Conference on Computer and Knowledge Engineering (ICCKE 2022)
- D. Nourbakhsh Sabet, H. Tamimi, A. H. Vette, and M. Nazarahari, "*Inverse Dynamics Meets Markerless Motion Capture during Standing: Concurrent Validation of Center of Mass and Center of Pressure Estimations*," Ann Biomed Eng, 2025 (under review).
- D. Nourbakhsh Sabet, H. Tamimi, A. H. Vette, and M. Nazarahari, "From Cameras to Center of Pressure: Concurrent Validation of Markerless Balance Metrics Against Force Plate Measurements. Ready for submission, 2026.
- Participated and talked in conferences: Institute of Smart Augmentative and Restorative Technologies and Health Innovations (iSMART) Talk, Biomedical Engineering Day, 25th Annual Alberta Biomedical Engineering Conference.