

# Hessan Sedaghat

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## EDUCATION

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<i>Harvard University</i>	09/2023 – 05/2025
<b>Master in Design Engineering</b> Concentration: 3D CAD Modeling, Product Design, Hardware Development, Robotics, Failure Simulation, Sustainability	
<i>University of Nebraska – Lincoln</i>	01/2017 – 05/2020
B.S. in <b>Mechanical Engineering with Honors</b>   Minors in <b>Robotics Engineering</b> and <b>Mathematics</b> Honors Thesis: “Design and Development of a Robotic System to Simulate Autonomous Management in Plant Nursery”	GPA 3.85/4.00

## EXPERIENCE

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<i>Haddington Dynamics by Ocado Technology Group</i>	Las Vegas, NV
<b>Hardware Design Engineer</b>	08/2022 – 08/2023
<ul style="list-style-type: none"><li>Built testing fixtures to perform angular and cartesian calibration, improving the precision of 40 robotic arms by 30%.</li><li>Collaborated with the software engineering team to design and develop hardware components for 3 robotic grippers.</li><li>Utilized the novel manufacturing method of Vision-Controlled Jetting (VCJ) and integrated topology optimization techniques to Computer-Aided Design (CAD) models of a mechatronic assembly with 80+ components.</li></ul>	
<i>University of Nebraska Lincoln – Product Innovation Group</i>	Lincoln, NE
<b>Systems Engineering Manager</b>	08/2019 – 07/2022
<ul style="list-style-type: none"><li>Coordinated a multidisciplinary team from project concept to final production, fulfilling automation needs of 20+ clients.</li><li>Implemented, programmed, and calibrated sensor modules, ensuring the overall optimization of 12 autonomous systems.</li><li>Created proposals, managed schedules, developed BOMs, wrote technical reports, and provided updates to stakeholders.</li></ul>	
<i>University of Nebraska Medical Center</i>	Omaha, NE
<b>Product Design Engineer</b> (part-time)	10/2020 – 08/2021
<ul style="list-style-type: none"><li>Cooperated with vascular surgeons and biomedical engineers to invent a minimally invasive medical device, assisting with the acquisition of a design patent and securing a grant amount of \$250k.</li><li>Conducted Design of Experiments (DOE) and rapid prototyped fixtures using 3D printing to validate 7 design concepts.</li><li>Developed a 92% accurate autonomous catheter advancement unit equipped with a custom-designed user interface.</li></ul>	
<i>University of Nebraska Lincoln – Advanced Machinery Systems Laboratory</i>	Lincoln, NE
<b>Undergraduate Robotics Researcher</b> (part-time)	06/2018 – 06/2019
<ul style="list-style-type: none"><li>Developed electro-mechanical systems and integrated proximity sensors for 3 autonomous mobile platforms.</li><li>Performed kinematic analysis and improved run time of a 6 Degree-of-Freedom (DOF) robotic manipulator by 75%.</li><li>Achieved \$8000 in grants to use in 3 separate research projects and presented the findings at the annual American Society of Agricultural and Biological Engineers (ASABE) international conference and to Nebraska State Senators.</li></ul>	

## PROJECTS & AWARDS

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- FireGuard, 2023:** Engineered an in-field fire protection system for Sequoia National Forest, integrating machine learning techniques and LoRa communication for enhanced wildfire detection & response measures in under 10 minutes.
  - ASABE International Robotic Design Competition, 2017-2022:** Fabricated and programmed multiple autonomous robotic systems to execute agricultural tasks such as fruit harvesting. Competed against more than 15 teams each time and obtained the following placements: 1<sup>st</sup> place 2022, 4<sup>th</sup> place 2019, 5<sup>th</sup> place 2018, 2<sup>nd</sup> place 2017.
  - Soil Sampler, 2022:** Built an automated system to extract soil samples and monitor data in real time. Decreased sample extraction time from 30 minutes to less than 5 minutes. The device helped researchers improve turf conditions in 3 golf courses across Nebraska and save more than \$35k for resort owners.
  - Refurbished Robotic Arm, 2020:** Modernized hardware and software components of a robotic arm controller initially built in the 1980s. Maintained the arm's full functionality and reduced the controller's weight and size by more than 90%.
  - Sensi-Plate, 2019:** Spearheaded the design and testing of a smart plate capable of tracking nutrition in childcare settings. The project won the Platinum Award for the UNL Department of Computer Engineering Senior Design Project.
  - Awards:** Harvard University Graduate Fellowship (2023) | Iranian Association of Boston Graduate Scholarship (2023) | Dean's List (2017-2020) | Keith N. Newhouse Teaching Award (2019) | Milton E. Mohr Award (2018) | UCARE Research Award (2019) | Iranian Students Foundation Scholarship (2018) | Global Laureate Scholarship (2017)

## SKILLS

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Design & Simulation:	SolidWorks, Onshape, KiCAD, Finite Element Analysis, Comsol, Creative Suite, LabView
Prototyping:	Arduino, Soldering, PCB Design, Sensors, Motors, 3D Printing, Laser Cutting, CNC Mill, Lathe
Programming:	C++, MATLAB
Fabrication:	Design for Manufacturing & Assembly (DFMA), General Dimensioning and Tolerancing (GD&T)