Hessan Sedaghat

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EDUCATION

Harvard University   09/2023 – 05/2025
Master in Design Engineering   GPA 4.00/4.00
Concentration**:** 3D CAD Modeling, Product Design, Hardware Development, Robotics, Wearables, Sustainability, Innovation

University of Nebraska – Lincoln   01/2017 – 05/2020
B.S. in **Mechanical Engineering with Honors |** Minors in **Robotics Engineering** and **Mathematics**   GPA 3.90/4.00
Honors Thesis: "Design and Development of a Robotic System to Simulate Autonomous Management in Plant Nursery"

EXPERIENCE

Haddington Dynamics by Ocado Technology Group   Las Vegas, NV
Mechanical Design Engineer   08/2022 – 08/2023
- Built testing fixtures to perform angular and cartesian calibration, improving the precision of 40 robotic arms by 30%.
- Collaborated with the software engineering team to design and develop hardware components for 3 robotic grippers.
- Utilized the novel manufacturing method of Vision-Controlled Jetting (VCJ) and integrated topology optimization techniques to Computer-Aided Design (CAD) models of a FPGA powered mechatronic assembly with 80+ components.

University of Nebraska Lincoln – Product Innovation Group   Lincoln, NE
Systems Engineering Manager   08/2019 – 07/2022
- Coordinated a multidisciplinary team from project concept to final production, fulfilling automation needs of 20+ clients.
- Implemented, programmed, and calibrated sensor modules, ensuring the overall optimization of 12 autonomous systems.
- Created proposals, managed schedules, developed BOMs, wrote technical reports, and provided updates to stakeholders.

University of Nebraska Medical Center   Omaha, NE
Product Design Engineer (part-time)   10/2020 – 08/2021
- 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.
- Conducted Design of Experiments (DOE) and rapid prototyped fixtures using 3D printing to validate 7 design concepts.
- Developed a 92% accurate autonomous catheter advancement unit equipped with a custom-designed user interface.

University of Nebraska Lincoln – Advanced Machinery Systems Laboratory   Lincoln, NE
Robotics Research Assistant (part-time)   06/2018 – 06/2019
- Developed electro-mechanical systems and integrated proximity sensors for 3 autonomous mobile platforms.
- Performed kinematic analysis and improved run time of a 6 Degree-of-Freedom (DOF) robotic manipulator by 75%.
- 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.

PROJECTS & AWARDS

- **Strix, 2023***:* Engineered an in-field fire protection system for Sequoia National Forest and applied machine learning techniques and LoRa communication to enhance wildfire detection and strategic response measures. The project is currently a semifinalist in the President's Innovation Challenge at Harvard University.

- **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: 1st place 2022, 4th place 2019, 5th place 2018, 2nd place 2017.

- **Soil Sampler, 2021:** 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 Fellowship (2023) | Dean's List (2017-2020) | Keith N. Newhouse Teaching Award (2019) | Milton E. Mohr Innovation Award (2018) | UCARE Research Award (2019) | Iranian Scholarship Foundation Scholarship (2018) | Global Laureate Scholarship (2017)

SKILLS

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