Omar Mohamed Gouda

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PROFESSIONAL PROFILE

- Experienced with **robotic** systems integration and design through leading robotics projects
- Well-versed in **mechanical design** and assembly through machine design and automation
- Working knowledge of **robotic work cell design** and integration of force feedback and vision systems
- Proficient in mechanical prototyping using mills/lathes/CNCs/welders and laser cutting/3D printing
- Exposed to **Stress and Thermal Analysis** for critical applications using Solidworks and ANSYS
- Capable of handling several projects from **design concepts to fully functional prototypes**

RELEVANT WORK EXPERIENCE

Custom Machine Design Engineer, Hatch Ltd., Mississauga, ON **Sept. 2016 – Dec. 2016**

- Performed calculations and design reviews for an automated robotic conveyor assembly prototype, keeping track of project progress and providing advice to the student capstone team involved
- Designed a real-time control system using LabVIEW for a proprietary telerobotics industrial application
- Setup robotic simulations to prove out two independent large scale project concepts to clients

Research and Development Engineer, SUMMO Steel, Burlington, ON **Jan. 2016 – Apr. 2016**

- Automated the palletization/packing process of tubular automotive products by designing customized magnetic grippers and programming industrial ABB/FANUC robots, saving the costs of 5 operators
- Handled several projects independently from design concepts to fully functional prototypes
- Designed, machined and welded test jigs and fixtures for a laser cutting manufacturing experiment
- Arranged meetings with suppliers to explore products, handling relevant quotes and purchase orders

Aerospace Software Engineer, Honeywell Aerospace, Mississauga, ON **May 2015 – Aug. 2015**

- Automated the testing process of the Boeing 737 air conditioning and pressurization systems software reducing one week of manual testing into just a couple of hours
- Offered various Python programming solutions to generate large test scripts (5,000+ lines of code)

Design Test Assistant, MedAvail Technologies, Mississauga, ON **Sept. 2014 – Dec. 2014**

- Investigated and resolved high priority field failures of the company's pharmaceutical kiosk
- Designed, prototyped and installed electronic low pass filters to fix a major chronic sensor issue using oscilloscopes and multimeters, which eliminated machine reboot downtime
- Performed rigorous machine cycle testing using PowerShell to catch firmware and mechanical flaws

EDUCATIONAL BACKGROUND

Bachelor of Applied Science (BASc), Honours Mechatronics Engineering, Waterloo **Sept. 2013 – Present**

- *Ranked among the **top 5%** in my class and recognized on the **Dean's Honours List** every term*

Pre-University/Foundation Degree, Asia Pacific University, Malaysia **Nov. 2011 – Apr. 2012**

- *Ranked first in my class and recognized for academic excellence and high achievements*

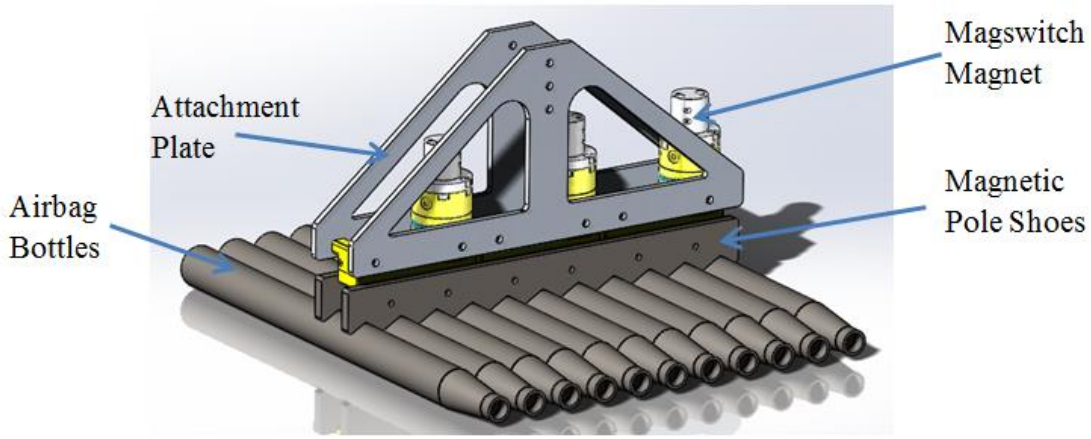
ACTIVITIES & INTERESTS

- Long distance cycling and mountain biking
- Aviation and professional flight simulation
- Bouldering, calisthenics and gymnastics

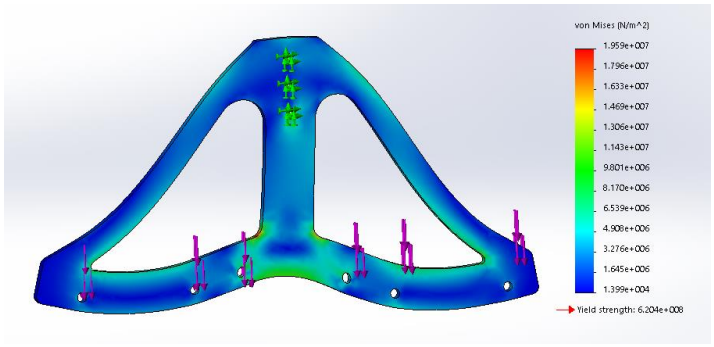
AUTOMATION PROJECT

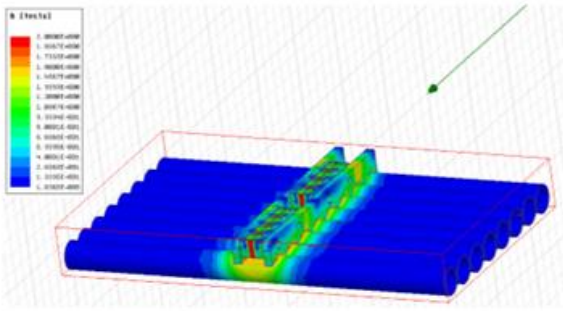
SUMMO STEEL: Automating the Packing Process of Tubular Automotive Products into Bins
This was an independent project completed starting from the pre-design phase, to sending out drawings for fabrication, to post machining/assembling components and finally proving out a customized magnetic gripper concept by programming an industrial ABB robot.

DESIGN

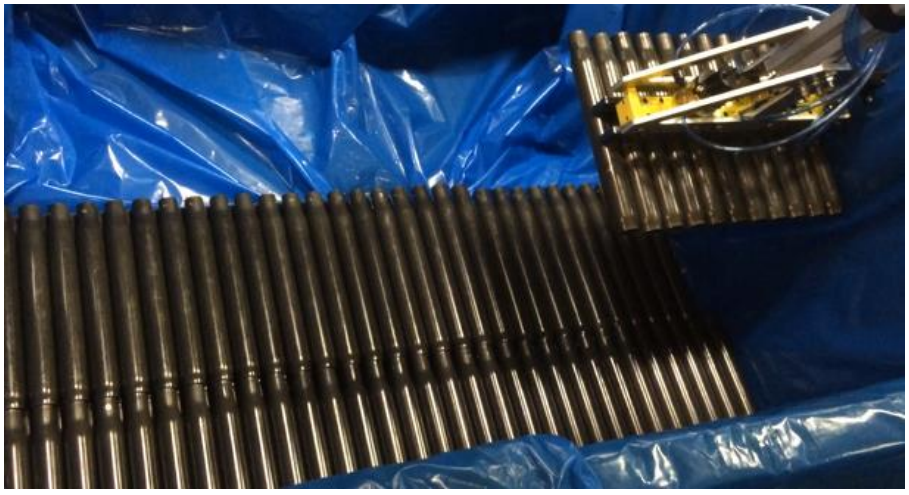


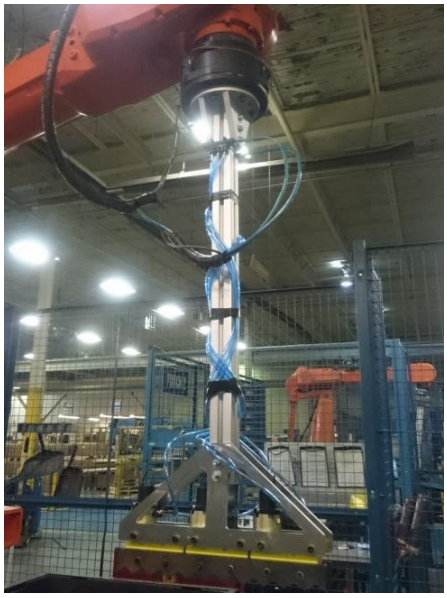
ANALYSIS





PROTOTYPE

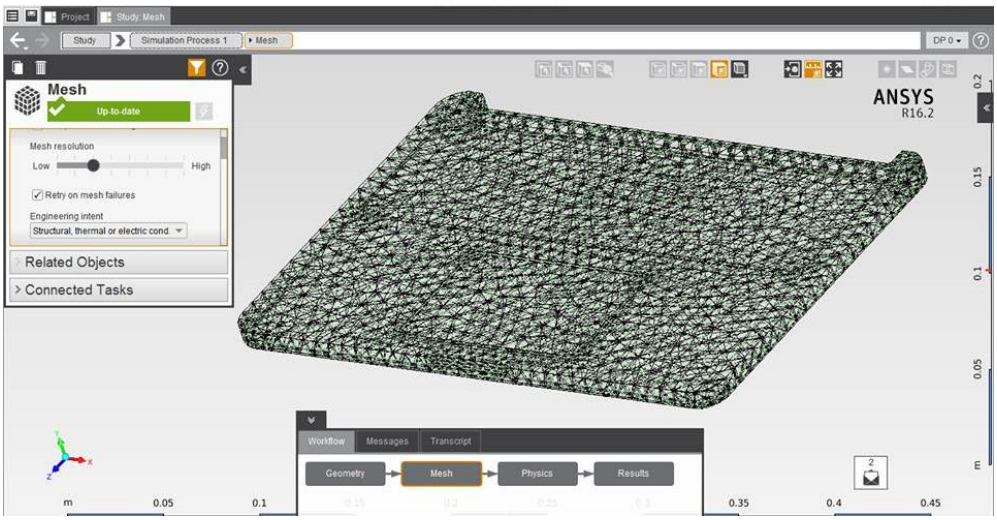




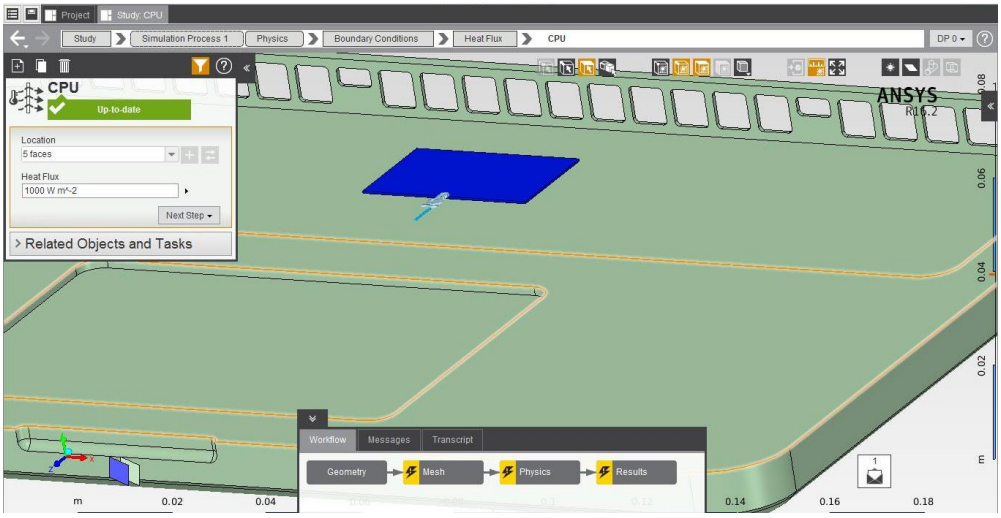
ANSYS MODELLING

Research Project: Analysing the thermal heat distribution of the average laptop
The purpose of the project was to create an accurate model of the heat distribution around a MacBook based on theoretical and mathematical models. This is then used to extract information such as determining the ideal CPU operation to obtain maximum efficiency.

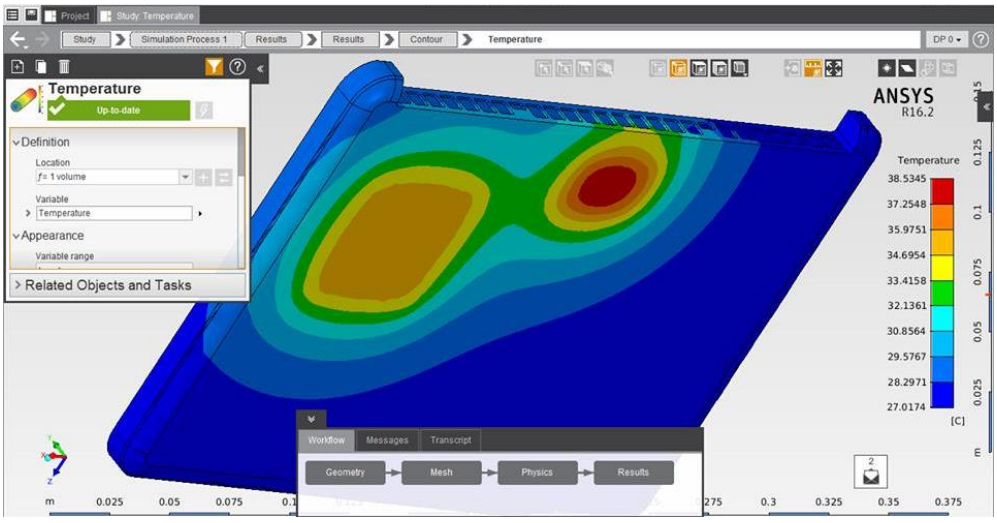
Mesh Discretization



Boundary Conditions

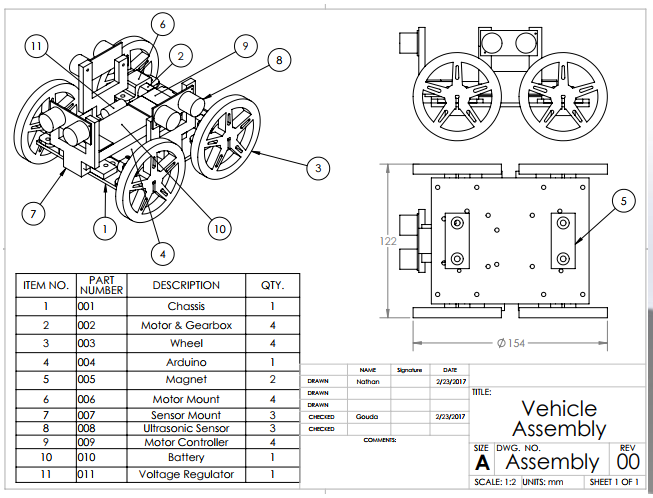


Results



AUTONOMOUS STEEL WALL CLIMBING ROBOT

3D CAD Robot Design: Includes Magnets, Wheels, Motors, Mounts and Sensors



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	001	Chassis	1
2	002	Motor & Gearbox	4
3	003	Wheel	4
4	004	Arduino	1
5	005	Magnet	2
6	006	Motor Mount	4
7	007	Sensor Mount	3
8	008	Ultrasonic Sensor	3
9	009	Motor Controller	4
10	010	Battery	1
11	011	Voltage Regulator	1

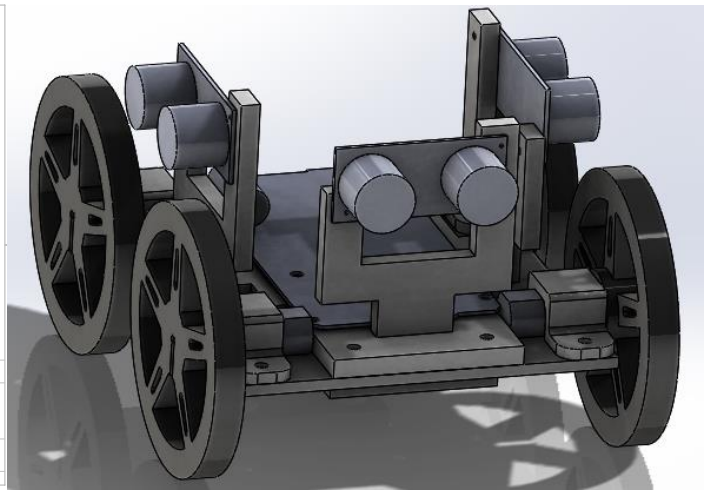
	NAME	Signature	DATE
DRAWN	Nathan		2/23/2017
DRAWN			
DRAWN			
CHECKED	Gouda		2/23/2017
CHECKED			

COMMENTS:

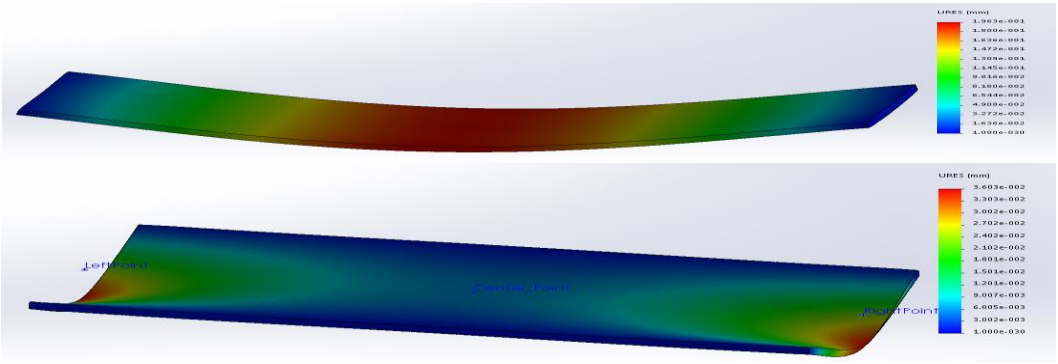
TITLE: Vehicle Assembly

SIZE A | DWG. NO. Assembly | REV 00

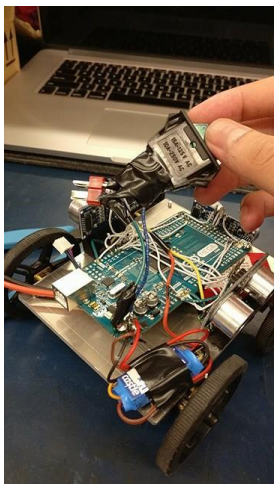
SCALE: 1:2 | UNITS: mm | SHEET 1 OF 1

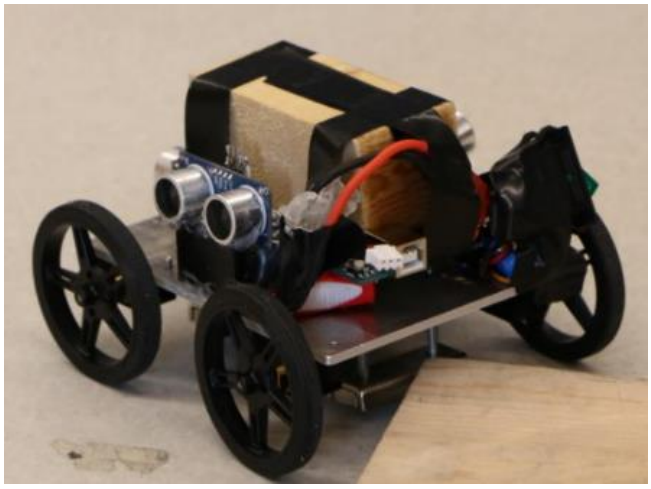


Solidworks FEA Analysis: Effect of Magnet Locations on Chassis



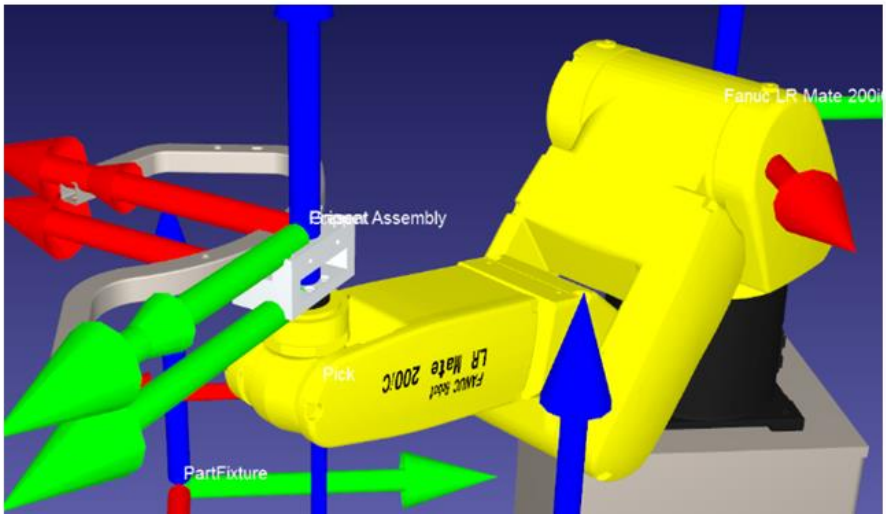
Final Robot Assembly



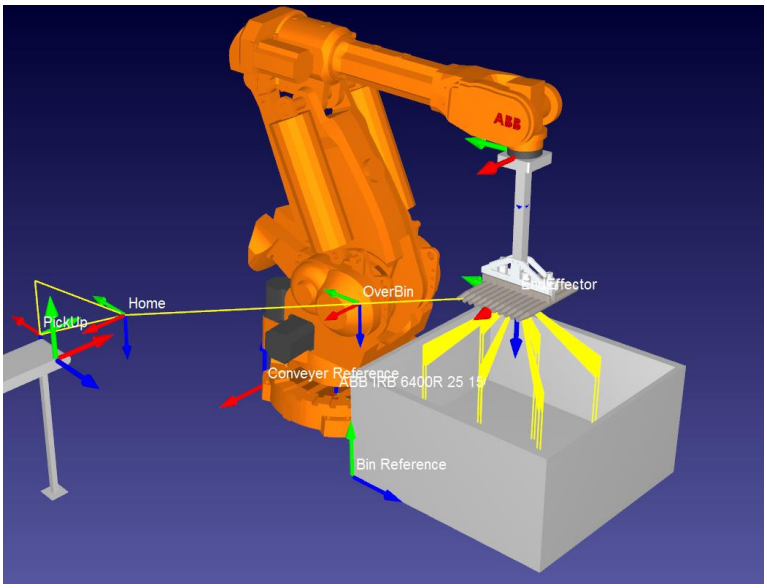


FURTHER DESIGN AND AUTOMATION PROJECTS

Laser Cutting Cell



Tube Palletization



Custom 3D Printing Designs