

Karim Chamaa

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EDUCATION

New York University Tandon School of Engineering, Brooklyn, NY **January 2017**

Master of Science in Mechatronics and Robotics Engineering with high distinction, GPA:4.0

Lebanese American University School of Engineering, Byblos, Lebanon **January 2015**

Bachelor of Engineering in Mechanical Engineering with distinction, GPA:3.5

SKILLS

Software: ANSYS, Android Studio, Arduino, AutoCAD, C#, C, C++, CATIA, CSS, Eagle CAD, Gazebo, Git, HTML, Java, JavaScript, Jupyter, jQuery, LabVIEW, Linux, Markdown, MATLAB, Mathematica, Microsoft Office, OpenCV, Primavera, Python, ROS, Simulink, SolidWorks, Tensor Flow, Unity3D, V-REP.

Hardware: Arduino, electric circuit design, National Instruments DAQ, NVIDIA Jetson TX2, PCB, Raspberry Pi.

Language: Fluent in Arabic, English, and French.

ACADEMIC PROJECTS

Autonomous Writing and Drawing Robot: *New York University* **January 2016 - May 2016**

- Built a low cost and stand-alone robotic arm capable of reproducing any paint file or captured image by making use of its onboard camera.
- Designed the electric circuit from scratch, performed a full Kinematics analysis of the arm, interfaced with the hardware through a Python code inside a Linux environment and a C code on an Arduino microcontroller.
- Improved user everyday life by simply having a robotic arm that can draw, write or mimic any file accurately.

Building Integrated Autonomous Firefighting Robot: *Lebanese American University* **February 2014 - January 2015**

- Designed and built a fast response robot capable of traveling to the fire, overcome harsh terrain, avoid obstacles, detect the seat of the fire and extinguishing it in the most efficient manner.
- Introduced a new mapping technique, where the user will simply add an AutoCAD drawing to the robot using LabView and C programming.
- Ensured the safety of the residents, where casualties from uncontrolled fires would be a thing of the past.

PROFESSIONAL PROJECTS

KUKA Path Planning Robotics Challenge: *Udacity* **June 2018 - August 2018**

- Designed the KUKA challenge by collaborating with the Karlsruhe Institute of Technology in Germany.
- Built and contributed to the SDK and project environment setup using C++ and ROS.
- Modeled a maze on CATIA, uploaded it to Gazebo, and sent the drawing drafts to be physically built in Germany.
- Coded in Python inside a Linux environment and tested multiple path planning algorithms to search for a path inside the maze, and then move an object from start to goal state with the help of a 6-DOF industrial KUKA arm.
- Offered access to expansive hardware for participants all around the world who solved the challenge locally on their Linux host, uploaded their code to our AWS server, and received a live video feed of their solution deployed on the real-hardware in Germany.

Home Service Robot: *Udacity* **April 2018 - June 2018**

- Created and built the capstone project for the Robotics Software Engineer Nanodegree program at Udacity. This project combines the three essential robotics algorithms: Localization, SLAM, and Path Planning.
- Interfaced multiple ROS packages and coded nodes in C++ to autonomously map an environment and navigate to pick up and drop off objects in a simulated environment.
- Granted a worldwide community with a project that they can build upon to create their day to day home service robot that can deliver anything they need.

NASA Mars Rover Control: *Udacity* **September 2017 - December 2017**

- Implemented a TCP/IP protocol to interface with a Rover inside a Mars-like environment on Unity.
- Granted programmers with the ability to test their C++ skills inside a Linux environment and write a keyboard teleop program to control the robot in an interactive and fun simulation environment.

EXPERIENCE

Udacity, Mountain View, CA

August 2017 – Present

Content Developer, Robotics

- Designed the Robotics Engineer Nanodegree program and taught state of the art software algorithms including Localization, SLAM, Path Planning, and Navigation in C++, which is currently streamed to a worldwide community.
- Worked closely with industry partners including top software and robotics companies. Partnered with Nvidia to integrate hardware using newly released platforms such as the Nvidia Jetson TX2.
- Expanded my contributions over multiple branches of robotics to include new areas within autonomous systems, such as AI, DL, and RL applications.
- Gained expertise in both hardware and software side of engineering especially in Linux, C++, and ROS.
- Trained a large worldwide community to master software and hardware skills to pursue rewarding jobs.
- Granted the Speed award for always staying ahead of the schedule and keeping my promise to deliver on time.

Scimund Inc., Brooklyn, NY

May 2017 – August 2017

Chief Robotics Engineer

- Designed a revolutionary virtual reality headset while taking part in developing the front end side as well as the electronics.
- Led a team consisting of hardware, mechanical design, and software engineers.
- Coordinated the activities of the engineers and managed multiple priorities and deadlines.
- Provided a large community of virtual reality enthusiasts with the ability to record a 360 video of their day to day life and watch it using VR technology.

New York University Mechatronics and Controls Laboratory, Brooklyn, NY

July 2016 – January 2017

Graduate Research Assistant

- Built and experimented a mobile robot with an assistance duty using a robotic arm, a Kinect, and a laser scanner.
- Designed a virtual reality Android application where the user can select any object to be delivered by the robot.
- Improved the life of persons with physical disabilities by implementing a robot that can assist them.

New York University Center for K12 STEM Education, Brooklyn, NY

June 2016 - January 2017

Team Leader

- Led and trained a team of 15 student instructors in order to promote engineering teaching for more than 400 high school students around New York City.
- Developed curriculum, managed resources and designed robotic activities.

Middle East Airlines (MEA), Beirut, Lebanon

July 2014 - August 2014

Mechanical Engineering Intern

- Developed knowledge while attending lectures, working in the continuous airworthiness management organization, quality control and, scheduling departments.
- Performed maintenance checks A, B, and C on Airbus 330 and Airbus 320 aircraft.

A.Fallaha & Co., Zalka, Lebanon

June 2010 - December 2013

Salesperson

- Maintained strong relationships with customers and granted high value-adding services.
- Observed market activity and quoted pricing in order to preserve healthy profit margins.

Crown Flour Mills, Cornich Al Naher, Lebanon

July 2008 - August 2008

Mechanical Engineering Intern

- Achieved routine scheduled maintenance work on flour milling machines and responded to equipment flaws.
- Developed new maintenance strategies, controlled maintenance tools and monitored maintenance costs.

VOLUNTEER ACTIVITIES

Red Cross

January 2012 - September 2012

- Saved the lives of people by responding to emergencies and disasters.

ADDITIONAL INFORMATION

Honors and Awards: United Nations International Children's Emergency Fund certificate of participation.

Student Clubs and Organizations: Member of the Scout Association for more than twelve years.

Personal Interests: Enjoy hiking and swimming.