

# ALEXANDER KHOURY

Permanent Residence: [REDACTED]  
Current Residence: [REDACTED]  
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**OBJECTIVE** Graduate student passionate about robotics and artificial intelligence, looking for a full-time position.

**EDUCATION** University of California, San Diego  
**B.S. in Electrical Engineering**, emphasis in **Machine Learning & Controls** | Overall GPA: 3.36 | Major GPA: 3.61  
Pursuing **Master's Degree** in Electrical Engineering: **Intelligent Systems, Robotics, and Controls** | GPA: 3.840

**SKILLS**  
**Languages:** Python, C++, C, MATLAB  
**Software Design:** ROS, OpenCV, TensorFlow, PyTorch, Linux  
**Learning:** Generative Learning, Discriminative Learning, Deep Learning, Reinforcement Learning  
**Planning:** Search-Based Planners (A\*, Weighted A\*, JPS, RTAA\*), Sampling-Based Planners (RRT, RRT\*)  
**Estimation:** SLAM, Kalman Filters (EKF, UKF), Particle Filters, MLE, MAP, MMSE, Bayesian Estimation, Regression  
**Hardware:** Soldering, Debugging, Hardware/Electronic Prototyping, PCB/CAD Design

**EXPERIENCE**  
**BRAIN CORP, ROBOTICS, SAN DIEGO**  
*Summer 2018 – R&D Software Engineering Internship*

- **Perception / Motion Planning / SLAM**
- Python / C++

*Summer 2017 – Software Engineering Internship*

- Solely responsible for designing, implementing and testing various software solutions for **safety-critical** situations.
- **Sensor filtering / calibration** solutions accredited to vastly **decreasing vehicle errors** caused by sensor noise allowing for **smoother/uninterrupted navigation**.
- Experience with processing data from various sensors such as **RGBD Cameras, LIDARs, IMUs**
- Python / C++

*Summer 2016 – Hardware Engineering Internship*

- Assembly of **self-driving electric vehicles** for use in the industrial floor care industry.
- Created and managed various design documents and packages
- Established **professional relations** with various vendors and fabrication houses.
- Design and assembly of various **cabling harnesses** with a multitude of different connectors and wire.
- Interfaced with various sensors, including **RGBD cameras, simple TOF, Lidar, and Sonar**.

**INTEL CORPORATION, WIRELESS GROUP, FOLSOM – Engineering Intern – Summer 2015**

**PROJECTS**  
**Project Documentation Website:** <https://ackhoury.github.io/> | **GitHub:** <https://github.com/ackhoury>  
**Independent Projects:** [2017-]

- **Particle Filter Online-SLAM** on a humanoid robot
- Orientation Estimation with **Unscented Kalman Filter**
- Object Detection via **Color Segmentation**
- Intercepting **moving targets** in planning environments with **local minima** with RTAA\*
- Generated realistic faces with **Deep Convolutional Generative Adversarial Network (DCGAN)**
- Solved a few **Atari** environments, **OpenAI Retro (Sonic)** with **Rainbow DQN**
- Solved **OpenAI Gym** environments (**MuJoCo** and **Classic Control**) with **DDPG, REINFORCE, DQN**

**Team Shuffle:** [2017]: *Founder/Team Lead | Shuffle Project | 2<sup>nd</sup> Place ECE Design Competition 2017 Winner*  
Implemented a smart insole design that **detects gait abnormalities in real time** with deep learning.  
**Multi-Agent Robotics Lab (MURO):** [2017-]: *Undergraduate Research in "Swarm" Robotics*  
Implemented **self-localization and controls** on a small triangular omnidirectional robot.  
**IEEE Quadcopter Team:** [2016–17]: *Simulation | Planning | Hardware | 2017 Aerial Robotics Competition (IARC)*  
**FIRST Robotics:** [2010–13]: *FTC Team Nova 4963 | Two World Championships, placed 14<sup>th</sup> and 9<sup>th</sup>*