

Abdulrahman Alkurdi

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Education

University of Illinois at Urbana Champaign

May 2021

DOCTORATE IN AEROSPACE ENGINEERING

3.3/4

Area of interest: Machine Learning (RL, ML, DL and vision), Autonomy, Robotics & UAVs, Decision and Control, Applied problems.

- **Classes:** Reinforcement Learning, Machine Learning, Autonomous Vehicle Systems, Autonomous Decision Making, and Controls.
- Awarded KACST PhD fellowship. (2016-current)

Lehigh University

Jan 2011

BACHELORS & MASTERS IN MECHANICAL ENGINEERING

3.3/4

Focused on tech and product development, entrepreneurship and manufacturing to bring new skill sets and talents to job market.

- 'Awarded SABIC College Scholarship (0.4% acceptance rate across Saudi Arabia) and became mentor to future scholars (2009-2016).

Experience & Projects

Stall/Spin Detection in Unmanned Aircraft

Palo Alto & Riyadh

RESEARCH SPECIALIST AT KACST AND STANFORD UNIVERSITY

Jan 2015 – Aug 2016

- Designed, built subscale aircraft to conducted experimental stall & spin research by flowfield visualization and characterization.
- Programmed DAQ to log structured data for fusion and autopilot detection in C++.
- Perform ground testing for sensors, aircraft and electronics pre-flight.
- Extracted unbiased measurements for aerodynamic state estimation leading to stall detection, prediction and recovery algorithm.
- Published and presented work in a peer reviewed conference.
- **Publication:** Bunge, R.A., Alkurdi, A.E., Alfaris, E. and Kroo, I., 2016. In-Flight Measurement of Wing Surface Pressures on a Small-Scale UAV During Stall/Spin Maneuvers. *AIAA Flight Testing Conference* (p. 3652)

Learning to Fly a Glider Using RL

Champaign, IL

- Coded a reduced order flight and thermals simulator in OpenAI Gym in Python. Used evolving gaussian process to model thermals.
- Formulated input to agent in a simplified fashion such that only direction of features or rate of change of features without magnitude.
- Training an agent using SARSA resulted in successfully reducing rate of altitude loss, outperforming random policy and freefall.

Autonomous ground robot.

Champaign, IL

- Implemented path planning, tracking, localization, obstacle avoidance, object detection and classification algorithms using ROS.
- Research and set plans to implement state-of-the-art stereo cameras and LIDAR based algorithms for objective detection, localization and classification to solve an open problem.

Start ups and Entrepreneurial experiences:

- Engaged and consulted multiple startups in the appliances, consumer electronics, training and development, engineering consulting, etc. Most notable SIILCO: a local appliance company with multimillion dollar investment and valuation.
- Founded, developed and sold a couple of micro businesses. In the food, health and technology sectors

Saudi Basic Industries Corp

Aljubail, SA

PRODUCTION ENGINEER - MACHINERY DIAGNOSTICS ENGINEER

Mar 2011 – Jan 2015

- Provided Technical Engineering support for rotating equipment to 90 SABIC affiliates around the world
- Initiated, studies and oversaw implementation of lean manufacturing techniques leading to world record breaking productions through change management techniques.
- Lead efforts to revise, rewrite and publish standard operating procedures on multi-organization scale.
- Co-created a global platform for knowledge and expertise sharing as one of handful certified CatIII vibration analysts in the middle east.
- Conducted the first of it's kind big data analysis on production and machinery data to improve global productivity and reliability.

Skills and Interests

Technical: Python (Tensorflow, Keras, Pytorch, OpenCV, Openai Gym), C++, MATLAB, ROS

Interests

Mentorship: I am a big believer in giving back and mentorship. I have had active mentors in life and regularly engage in peer mentorship to undergrads, grads and work peers.

Hobbies: I really enjoy biking, fishing, scuba diving, and friendly debates. Ask me where my best fishing spots are, I just might tell you!