Abdullah is a research engineer at the Saudi Aramco Research and Development. He is interested in developing AI models to optimize engine experiments, decarbonizing the internal combustion engines through hydrogen combustion, and establishing blending rules for gasoline and gasoline surrogates. Abdullah received his Ph.D. in Mechanical Engineering from KAUST in 2020, oriented around understanding fuel/engine interactions for efficient and clean burning of internal combustion engines. Abdullah authored and co-authored 20 articles in peer-reviewed journals and conferences, and has one granted patent application

Abdullah AlRamadan

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SUMMARY

Research engineer at the Saudi Aramco Research & Development Department who's interested in sustainable mobility. I have a PhD in Mechanical Engineering from KAUST, oriented around understanding fuel/engine interactions for 'Efficient' and 'Clean' burning of internal combustion engines. During that journey, I showcased a 'Fuel Flexible' engine, capable of running 'Diesel' and 'Gasoline' at the same time. I'm currently riding the 'Artificial Intelligence' and 'Machine Learning' wave, hoping to make use of them in shortening the development cycle of advanced engine concepts.

PROFESSIONAL EXPERIENCE

July 2021 – Present

Engineer II, Saudi Aramco, Dhahran, Saudi Arabia

- Engine Combustion Team AI Strategy: Contributed to establishing AI strategy of the Engine Combustion Team that was endured by the Transport Technologies Chief Technologist.
- H_2ICE Roadmap: Investigated the prospect of hydrogen ICE as a bridging technology for Fuel Cells EV. Contributed in developing H2ICE program, endured by Aramco's CTO, that involves projects with 3 OEMs.

Aug. 2020 – June 2021

Engineer III, Saudi Aramco, Dhahran, Saudi Arabia

- Understanding the blending characteristics of octane boosters: Develop novel estimation models to predict the octane response of ethanol and MTBE blending to gasoline and gasoline surrogates.
- FUELCOM3: Project management of the high-pressure combustion theme in Aramco-KAUST project, which involves managing 8 students in 4 work packages.
- AI Models for engine experiments: Develop ML models to imitate the operation of spark-assisted GCI engine.

Aug. 2016 – July 2020

PhD Student, KAUST, Thuwal, Saudi Arabia

- Fuel flexible internal combustion engine: Investigated the engine load threshold where fuels with different octane numbers become indistinguishable
- Three stage auto-ignition of fuels: Investigated an unusual heat release characteristic where fuel releases heat in three-stages. This behavior happens at extreme lean fuel/air ratio and low temperature and high pressure regions. This phenomenon can be utilized to minimize CO2 emissions and enhance the operation of homogenous charge compression ignition engine (HCCI).

Oct. 2018 – Dec. 2019

Life Officer, CCRC Student Advisory Committee, KAUST, Thuwal, Saudi Arabia

- Enhance the social life of CCRC member: (a) Head of volunteers for conferences hosted by the center, (b) Organizing social events with certain themes (meet the

interns – meet the new members) to establish social boundaries with the center members and (c) Prepared documentations to define policies such as Student Awards, Student Office allocation, Policies for Elections in the Student Advisory Committee.

Jan. 2018 – Dec. 2018

President, Graduate Student Council, KAUST, Thuwal, Saudi Arabia

- Bridge the gap between students and KAUST management: Led a team of 16 members that engaged in multiple activities, including: (a) Restructuring the council to enhance its efficiency for future members, (b) Assisting to organize career fairs. (c) Organizing social and entertainment events for the students and (d) Assisting students in academic related issues.

Sep. 2013 – Aug. 2016

Engineer IV, Saudi Aramco, Dhahran, Saudi Arabia

- Basic combustion and simulations research: Chemical kinetic model development for gasoline surrogates and oxygenates, which involved validation in KAUST shock tube
- Alcohols blending to gasoline: Develop novel estimation method to predict the octane ratings of ethanol blended with gasoline surrogates.
- Facility planning and project management: Involvement in the establishment of a contract to design state-of-the-art facility for fuel storage and blending.

June 2011 – August 2011

Internship, Contract Design Group, Newcastle upon Tyne, United Kingdom

- AutoCAD 3D Design: Utilize AutoCAD software (Autodesk Inventor) to design mechanical parts individually and assemble them.

EDUCATION

Jan. 2018 – Oct. 2020

Doctor of Philosophy, Mechanical Engineering, KAUST

Graduated with GPA of 3.92 out of 4.00

Aug. 2016 – Dec. 2017

Master of Science, Mechanical Engineering, KAUST

Graduated with GPA of 3.89 out of 4.00

Sep. 2009 – Aug.2013

Bachelor of Engineering, Mechanical Engineering, University College London

Graduated with 1st Class honors + inclusion in the Dean's list.

PUBLICATIONS & TECHNICAL PRESENTATIONS

Published 20 articles in peer-reviewed journals and conferences (SAE – Fuel – Combustion and Flame – Applied Energy – Proceedings of the Combustion Institute).

One granted patent application.

FELLOWSHIPS/AWARDS

College Degree Program for Non-Employees (CDPNE), Saudi Aramco

- Fellowship to study bachelor's degree at University College London

The Dean's List Certificate, University College London

- Included in the list of the Department of Mechanical Engineering High Achievers