

## SDAIA-KFUPM Joint Research Center for Artificial Intelligence

SDAIA-KFUPM Joint Research Center for Artificial Intelligence (JRC-AI) was recently established at KFUPM to advance the research in the field of Artificial Intelligence (AI). The center aims to establish the Kingdom as a global leader among the league of data-driven economies by conducting and supporting research and innovation in AI, developing use-cases and solutions in accordance with the Saudi National Strategy of Data & AI to achieve the Kingdom's vision 2030. The center will be home to faculty and researchers from various departments, including Computer Science, Computer Engineering, Electrical Engineering, Systems Engineering, Math, Physics, and many other departments.

The center will address various problems in the field of AI with applications in two focus areas: Oil and gas, and Energy and Utility. In the oil and gas field, JRC-AI will focus on the application of AI in the oil and gas exploration and production pipeline including, but not limited to, seismic acquisition and processing, data compression and enhancement, seismic interpretation and inversion, reservoir characterization, real-time drilling, fault detection and risk assessment, production optimization, modeling and simulation, and site security and safety monitoring. On the energy and utility front, JRC-AI will focus on research on energy generation, monitoring, scheduling, forecasting, efficiency, and control for conventional, renewable, and hybrid power systems. Furthermore, the center will also work on research problems in the field of AI including machine learning, deep learning, reinforcement learning, representation learning, learning theory, resilient AI, and explainable AI.

The center research activity aims to develop the projects it undertakes into Proof-of-Concept (POC) and Minimum-Viable-Product (MVP), in addition to establishing a presence in global academic venues in the fields of its expertise. In addition, the center aims to attract, support, and train talent in the Kingdom in the field of AI by developing and conducting training programs for young talent, academic faculty, and executives.

### Center Director



The director of JRC-AI, Dr. Motaz Alfarraj, is an assistant professor in the Electrical Engineering Department at King Fahd University of Petroleum and Minerals (KFUPM). He received his B.Sc. degree with first honors in Electrical Engineering in 2013 from King Fahd University of Petroleum and Minerals (KFUPM), Dhahran, Saudi Arabia. He received his M.S. and Ph.D. degrees in Electrical and Computer Engineering with a minor in Math from Georgia Institute of Technology, Atlanta, GA in 2015 and 2019, respectively. His research interests include machine learning, deep learning, computer vision, and image processing. His research focuses on the integration of physics in data-driven systems to enable effective learning from noisy or unannotated data for applications in oil and gas exploration and production. Dr. Alfarraj was the recipient of the outstanding research award from the Center for Signal and Information Processing (CSIP) at the Georgia Institute of Technology in Spring 2019. He is a member of the IEEE Signal Processing Society (SPS), Society of Exploration Geophysicists (SEG), and Society of Petroleum Engineers (SPE). He is currently serving as the Chapter Chair of IEEE Signal Processing Society - Saudi Arabia Chapter.