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May 7, 2021

Re: Letter of recommendation for Dr. Khalil Al Handawi

Dear Sir or Madam,

It is my great pleasure to provide this letter of the highest recommendation possible for Dr. Khalil Al Handawi.

I know Khalil since January 2017, when he joined my research group at McGill, coming from one of the top US engineering universities, the University of Illinois at Urbana-Champaign (he started his PhD there in September 2016 but left after the first semester because of the hostile immigration policies introduced by the Trump administration).

Khalil's doctoral research addressed the challenge of changing engineering design requirements both during the design stage and during a system's operational lifetime. He had the idea of capitalizing on the advent of the additive manufacturing technology to develop a remanufacturing-based redesign strategy that can extend the useful operational lifetime of engineering systems. First he developed all the necessary computational models related to the thermomechanical process of additive remanufacturing and the prediction of the mechanical behavior of components after they have been remanufactured. Then, he developed a novel set-based design methodology which generates a family of optimal designs that can address a range of requirements and operating conditions. To address the severe practical challenge of high computational cost when applying his methods to real-world design problems, he built machine learning-based surrogate models to substitute the physics-based ones. In summary, his research included developing component and subsystem models of mechanical systems, integrating them into system-level models, and utilizing them to analyze and optimize system performance to inform component-, subsystem-, and system-level design decisions to support research and development.

Khalil has an excellent research track record. Besides having published a total of 5 journal papers and 5 conference papers, he has been awarded a fellowship for his Master's studies, a McGill Engineering Doctoral Award, and a FRQNT-funded PBEEE doctoral scholarship. He is meticulous in his scientific approach and also an effective communicator. His writing skills are excellent and his presentations are superb; he is especially capable of conveying complicated mathematical engineering principles and results in an effective manner using creative graphics. He has also demonstrated strong leadership skills by managing the Baja (off-road vehicle design) team of his undergraduate university, leading them to qualifying for the international Society of Automotive Engineers competition.

Moreover, Khalil functions extremely well in collaborative and diverse research environments. His doctoral research was funded by a joint EU-Canada project, so he spent three summers in Sweden collaborating with our partners at Chalmers University of Technology and GKN Aerospace Engine Systems. His contributions included organizing and conducting industrial workshops for transferring the knowledge created during the research project.

In parallel with completing his PhD and motivated by the ongoing Covid-19 pandemic, Khalil has taken the initiative of developing a dynamic agent-based simulation model to predict the spread of an infectious disease with respect to several variables and parameters. He is currently conducting highly interesting and promising research on developing effective non-pharmaceutical disease prevention methods, strategies, and policies using stochastic optimization and reinforcement learning.

In conclusion, Khalil's high work ethics, positive attitude, and go-getter mentality make him a highly valuable researcher and therefore an asset to any R&D organization. I therefore recommend him highly and without any reservation.

Thank you for considering my opinion; please do not hesitate to contact me if I can be of any further assistance.

Sincerely,

A handwritten signature in black ink, appearing to read 'Michael Kokkolaras', with a stylized flourish at the end.

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