Montréal Québec, Canada +1 (514) 572-7367 \searrow khalil.alhandawi@mail.mcgill.ca sol.research.mcgill.ca 0 github.com/khbalhandawi linkedin.com/in/khbalhandawi

ABOUT ME

I believe that physics and artificial intelligence should be two sides of the same coin. One cannot exist without the other. How? By crossvalidation. In this way, the toughest physics and mathematics problems can be solved! This philosophy is what drives my research.

EDUCATION

Doctor of Philosophy 2017 - 2020 Mechanical Engineering McGill University Master of Science 2013 - 2015 Mechanical Engineering Khalifa University **Bachelor of Science** 2009 - 2013FIRST CLASS HONOURS Mechanical Engineering

EXPERTISE

Optimization Machine learning CAD/3D modeling

Khalifa University

Software development

Uncertainty quantification

Scientific computing

AWARDS

2018 Doctoral research award Fonds de Recherche du Québec 56,000 CAD

McGill engineering doctoral award 2017 McGill University 96,000 CAD

REFERENCES

Prof. Michael Kokkolaras

Associate Professor **POSITION** Department of Mechanical **EMPLOYER** Engineering, McGill University michael.kokkolaras@mcgill.ca EMAIL.

Khalil Al Handawi, PhD

Engineer, designer, and researcher

RESEARCH

"Optimization-driven set-based design for dynamic design requirements"

How do you design a component when the design requirements can change at any moment and without advance notice? That is the question my dissertations tries to answer. To do so, I came up with design metrics for qualitative descriptions such as flexibility and robustness. I used optimization, and machine learning to obtain thousands of designs. This is a 1000 fold increase in the number of alternatives presented to clients. This culminated in a technology transfer at GKN aerospace.

python

• C++

MATLAB

• R • Online open-source code • Online news article

"Optimization of infectious disease prevention policies using agent-based modeling"

How can we apply the principles of design and decision-making to help bring the pandemic under control? To answer this question, I modeled how an infectious disease spreads in a small population. Diseases such as COVID-19 spread through social interaction. I programmed intelligent agents to model a complex social system. I used optimization to determine the critical amount of intervention necessary to keep the disease in check. The policies I obtained had a socio-economic impact that is **5 times less** than that of a complete lock-down.

• Qt Online open-source code • C++ • CUDA • python

WORK EXPERIENCE

Systems Optimization Lab, McGill University Postdoctoral Researcher

CURRENT, FROM JAN 2021

• Built and implemented a COVID-19 predictive model in a time of uncertainty.

• Came up with a project for students to understand multidisciplinary optimization.

McGill University

JAN 2017 - DEC 2020 (FT)

Research and teaching assistant

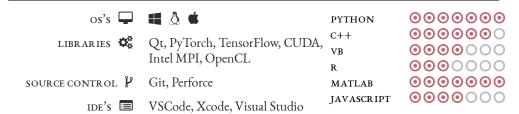
- Came up with new ways to teach programming skills to engineering students.
- Used design optimization and set-based design to give designers a competitive edge.

GKN Aerospace Engine Systems Visiting researcher

SUMMER 2017, 2018, 2019 (PT)

- Transfer academic research to the industry by providing training and workshops.
- Collect information about industrial workflows to guide academic research.

COMPUTER SKILLS



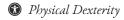
SKILLS

Goal Oriented

I believe in action over long-winded discussions. I listen to everyone's viewpoints and use my judgement to immediately act based on consensus to achieve goals quickly and efficiently.

№ Passionate

I have been interested in computers and video games for as long as I can remember. I love using my physics and engineering knowledge to bridge the gap between real and virtual computer worlds.



I specialize in gymnastics and calethtinics training for sound body and mind necessary to maintain the focus needed for innovative problem-solving.