Montréal Québec, Canada +1 (514) 572-7367 ${}^{\smile}$ khalil.alhandawi@mail.mcgill.ca khbalhandawi.github.io ((7) github.com/khbalhandawi linkedin.com/in/khbalhandawi

ABOUT ME

I am a researcher with 6 years of experience in simulation-based design, optimization, and highperformance computing. I enjoy working with large multidisciplinary teams and projects and love the prospect of mentoring and supervising other aspiring engineers.

EDUCATION

Doctor of Philosophy 2017 - 2020

> Mechanical Engineering McGill University

Master of Science 2013 - 2015

> Mechanical Engineering Khalifa University

Bachelor of Science 2009 - 2013

> Mechanical Engineering Khalifa University

RESEARCH EXPERIENCE



SYSTEMS OPTIMIZATION

Gradient-based optimization Stochastic optimization Derivative-free optimization



NUMERICAL SIMULATION

Finite element modeling Surrogate modeling



MACHINE LEARNING

Hyperparameter optimization Feature engineering Classification and regression



UNCERTAINTY QUANTIFICATION

Reliability-based design Monte Carlo simulation

AWARDS

Doctoral research award 2018 Fonds de Recherche du Québec

McGill engineering doctoral award 2017 McGill University

REFERENCES

Dr. Ahmed Bayoumy

POSITION Advanced Development Engineer Siemens Digital Industries **EMPLOYER EMAIL** ahmed.bayoumy@siemens.com

Khalil Al Handawi, PhD

RESEARCH

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

RESEARCH QUESTION: How can we apply the principles of design and decision-making to help bring the pandemic under control?

OUTCOMES: • C++ • CUDA • python • Qt • Open-source code

- Epiodomological model based on intelligent agents that can model complex social systems
- Optimal health policies to keep the disease in check
- GPU-accelerated agent-based simulation at least 100X faster than CPU simulations
- Policies with socio-economic impact that is 5 times less than that of a complete lock-down

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

RESEARCH QUESTION: How do you design a component when the design requirements can change at any moment and without advance notice?

OUTCOMES: • python • C++ • MATLAB • R • Open-source code • Online news article

- Design metrics for qualitative descriptions such as flexibility and robustness
- Machine learning model to **encode expensive structural simulations**
- Inference engine for generating thousands of feasible conceptual designs
- Technology transfer at GKN aerospace to help **shorten product lead times**

WORK EXPERIENCE

Systems Optimization Lab, McGill University

CURRENT, FROM JAN 202I (FT)

Postdoctoral Researcher

- 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

Research and teaching assistant

JAN 2017 - DEC 2020 (FT)

- 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

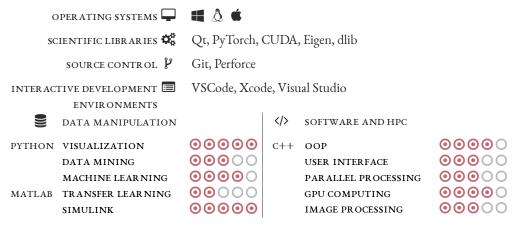
INTERPERSONAL SKILLS Q

SUMMER 2017, 2018, 2019 (PT)

Visiting researcher

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

SKILLS



SPOKEN LANGUAGES \bigcirc English (Fluent), Arabic (Fluent), French (Basic)

COMMUNICATION SKILLS Excellent written and verbal presentation skills.

Data analysis, proposal writing, and questionnaire design. Love working with others as a team, learning from them,

and teaching others.