KELVIN LEUNG

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EDUCATION

Massachusetts Institute of Technology **2019 – Present**
S.M. in Aeronautics and Astronautics
Uncertainty Quantification (UQ) Group, Aerospace Computational Design Lab (ACDL)
Major: Aerospace Computational Engineering

University of Toronto **2015 – 2019**
B.ASc. in Engineering Science, Major in Aerospace Engineering
Cumulative GPA: 3.95/4.00 *(High Honours)*
Entrance Scholarships: President's Scholar of Excellence, Delta Tau Delta Award
In-course Scholarships: Dean's Scholar of Excellence, Kenneth Ward Smith Scholarship

WORK AND RESEARCH EXPERIENCE

Massachusetts Institute of Technology **2020 – Present**
Research Assistant, Dept. of Aeronautics and Astronautics (Supervisor: Prof. Youssef Marzouk)

- Project objective to develop Bayesian methods for Earth remote sensing applications that are sufficiently fast for operations.
- Develop approximations of radiative transfer models using machine learning techniques.
- Investigate methods of dimension reduction.
- Implement Markov chain Monte Carlo (MCMC) algorithms using these structures to accelerate posterior sampling.

University of Toronto Institute for Aerospace Studies (UTIAS) **2018 – 2019**
Thesis Student (Supervisor: Prof. David Zingg)

- Project objective is to investigate stability of eigensystems resulting from summation-by-parts (SBP) operators.
- Implementing methods to increase stability such as rearrangement of governing equation into split forms and artificial dissipation.

University of Michigan **Summer 2018**
Research Assistant, Dept. of Aerospace Engineering (Supervisor: Prof. J. R. R. A. Martins)

- Performed CFD analysis for airfoils using various RANS and Euler solvers using Flux High-Performance Computing Cluster.
- Compiled CFD results into open-sourced airfoil design tool that performs airfoil analysis and optimization using a surrogate model (*http://webfoil.engin.umich.edu/*).

- Conducted mesh refinement studies to validate CFD results.
- Performed airfoil optimizations and created a comprehensive tutorial for airfoil optimization within the lab framework.

German Aerospace Center (DLR) **Summer 2017**

Research Intern, Institute of Propulsion Technology

- Implemented various signal processing methods for wave number decomposition.
- Validated signal processing methods with analytic signals and applied the methods to experimental acoustic data from measurements inside aircraft engine ducts.

University of Toronto Institute for Aerospace Studies (UTIAS) **Summer 2016**

Research Assistant (Supervisor: Prof. Philippe Lavoie)

- Project objective was to develop an optimization program that outputs propeller designs for unmanned aerial vehicle (UAV) quadcopters given specified flight conditions.
- Developed a MATLAB program to compute the performance model of a propeller, including propeller thrust and efficiency, given its geometric parameters.

Carleton University **2013 – 2014**

Student Researcher, Dept. of Mech. and Aerospace Engineering (Supervisor: Prof. M. Yaras)

- Performed flow visualization testing on wind turbine blades with tubercles in a water channel to improve turbine efficiency.
- Published research paper, “Investigation on Wind Turbine Blades with Tubercles”.
- Presented research at International Conference on Green Materials and Environmental Engineering in Hong Kong (Sept. 2014).

TEACHING EXPERIENCE

Teaching Assistant – 16.100 Aerodynamics **2019**

Aeronautics and Astronautics, MIT

- Hold weekly recitation sessions for a junior-level aerodynamics course.
- Assist in devising weekly problem sets and course project on aircraft design.
- Supervise and grade examinations.
- Hold weekly office hours and provide external assistance to students as needed.

Undergraduate Teaching Assistant – MAT186/MAT187 **2018 – 2019**

Department of Mathematics, University of Toronto

- Review course content and help students solve problems in two tutorial sessions per week for two first-year calculus courses.
- Grading quizzes and supervising examinations throughout the semester.

PROJECT EXPERIENCE

Aerospace Design Projects **2018 – 2019**

- Designed and constructed a remotely piloted aircraft to minimize a multi-objective cost.
- Systems design for orbiting space telescope using a top-down approach, including the electrical, GNC, data, and structures subsystems, partnered with MDA Corp. Developed sets of requirements and performed trade studies.

Construction of Autonomous Robot **2017**

- Designed and prototyped a fully autonomous robot that sorts cans for recycling.
- Responsible for implementation of digital and analog interfacing electronics, including circuit design and wiring.
- Placed **1st** in the final competition in a semester-long engineering design course.

University of Toronto Aerospace Team **2015 – 2017**

- Designed and manufactured the combustion chamber liner for a suborbital rocket.
- Assisted in the design and construction of a quadcopter.
- Designed components for a quadcopter using Solidworks.

AWARDS AND PUBLICATIONS

Engineering Science Research Opportunity Fund (ESROP) – International	2018
Research Internships in Science and Engineering (RISE) funded by MITACS	2017
Engineering Science Research Opportunity Fund (ESROP) – Domestic	2016
K. Leung, "Investigation of Wind Turbine Blades with Tubercles", Advanced Materials Research, Vol. 1051, pp. 832-839, 2014.	2014

SKILLS

Courses: Statistics, optimization, stochastic modelling, numerical methods for PDEs
Programming: Python, MATLAB, SQL, TensorFlow, C, Java
Languages: Native speaker of English, Mandarin, Cantonese. Proficient in French, Korean.