PhD position starting Fall 2024

Pilot Model Development for a Model-based Systems Engineering Framework for Future Aircraft

The Aircraft Systems Lab is looking for excellent candidates (**PhD**) as part of a collaborative research project with **Bombardier** in the context of their Ecojet research program. Dr. Liscouet-Hanke and Dr. Zeng will co-supervise the project.

Background & Objectives

Bombardier is leading the Ecojet research program, which will introduce the Blended Wing Body (BWB) aircraft configuration and new technologies to reduce business jet emissions by up to 50%. This project aims to develop processes, methods, tools and the associated development environment required to design the next generation of business aircraft.

Bombardier Ecoject Concept

The PhD candidate will perform research in human behaviour modelling in the context of aircraft flight operations with dual and single pilots, as well as modelling test scenarios and the flight environment. This model will enable pilot workload assessment and inform the system architecture specification and optimization. The modelling will be part of an effort to effectively use Model-Based Systems Engineering methods (i.e. Arcadia/Capella) in collaboration with other researchers in the project. The candidate(s) will work jointly with Bombardier experts to compile existing, research new ground and flight operation procedures and rules and define pilot behaviour(s) with objectives to predict flight crew workload and time to respond through normal and abnormal operational scenarios.

Qualifications & Skills

The candidate requires:

- Background in aerospace engineering and/or systems engineering
- Strong interest in human behaviour/ human-machine interaction
- Programming/modelling skills
- Being a pilot is a plus (but not required)

In addition to these technical skills, candidates must possess excellent initiative and autonomy, be committed to high-quality research and professionalism, and be willing to develop excellent oral and written communication skills. The candidates should also enjoy working in a research lab, which requires teamwork and collaboration with the industry partner.

How to apply

Qualified and highly motivated candidates are invited to send their application via email to susan.liscouet-hanke@concordia.ca using the subject ***" PilotModel - Ecojet"*** with the following elements:

- Email with your motivation and relevant experience
- Complete and up-to-date CV
- Up-to-date transcript or final grade of your degree
- Writing sample (recent publication or academic project report)

Applications will be reviewed until a suitable candidate is identified. Only candidates selected for an interview will be notified. PhD positions should start in Sep 2024 or shortly after.
Only shortlisted candidates will be contacted.

Equity, Diversity and Inclusion

We are committed to an inclusive research environment in the Aircraft Systems Lab. Applications from all qualified candidates are encouraged, particularly from underrepresented groups, such as women, visible minorities, indigenous persons, sexual minorities, persons with disabilities, and others who may contribute to diversification; candidates are invited to self-

identify in their application.

Ph.D. program and funding information

Before applying, please review the PhD in Mechanical or Industrial Engineering program overview at Concordia University: https://www.concordia.ca/academics/graduate.html

This position will be funded with a bursary. Excellent candidates may have the opportunity to receive additional entrance awards. It is encouraged to apply to additional external scholarships. Check out: https://www.concordia.ca/gradstudies/funding.html

The international tuition fees will be waived in some cases (e.g., French citizenship). Learn about study fee exemptions: https://www.concordia.ca/admissions/tuition-fees/international-fee-exemptions.html