



Le génie pour l'industrie



## Additive manufacturing for aerial systems

### Job description

The INIT Robots lab is seeking a master student (30 credits' MScA project) to design a new indoor airship (blimp) structure based on foam polymer additive manufacturing. Airships have several major advantages: significantly higher flight time for the same energy and a low weight-to-payload ratio, which makes it particularly suitable for applications close to the ground at low speed. It is also very safe to use, which is of particular importance for applications involving interactions with humans. However, the robust rigid structure of large outdoor airships is complex to scale down to indoor blimp. This project aims at providing tools to enhance blimp envelopes robustness.

This project involves the collaboration of several partners, namely the LIPEC lab with Pr. Ilyass Tabiai at ÉTS, the NXI Gestatio Lab directed by Pr. Nicolas Reeves at UQAM and the AMC lab directed by Pr. Meyer Nahon at McGill. You will work closely with the experts from these groups.

### Responsibilities

The successful candidate will carry out the responsibilities of this position with dynamism and creativity, namely

- You will have to characterise mechanical properties of various structure geometry and foam material with your own experimental plan;
- You will be in charge of the manufacturing and the assembly of an ultra-light structure prototype, including its membrane and the integration of its mechatronics (sensors and propellers);
- You will work alongside a team of several MScs and PhDs and several engineering interns with whom you are invited to share issues and provide support.

### Resources

We have one of the largest manufacturing facilities in all Canadian universities and a technical team to support you with manufacturing processes and the assembly.

### Duration

Start date is as soon as possible. The MScA project will most likely spread over two (2) years of full-time work.

### Salary and benefits

You will have a yearly scholarship ranging from \$15,000 to \$19,000 CAD based on the quality of the candidate. This includes:

- Flexible workweek schedule adaptable to the applicant cursus;
- The work mode is hybrid, meaning that you can work remotely at times. You will have to be in the lab to experiment with the hardware.

### **Profile and Job Requirements**

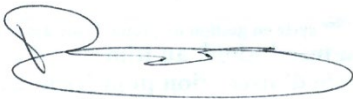
- You hold an undergrad diploma in mechanical engineering;
- You have strong knowledge of additive manufacturing;
- You have strong knowledge of aerial systems (structure/dynamics);
- Having experience in robotics is an asset.

### **Application Instructions**

Candidates are invited to submit an application file that includes:

- A CV
- Your most recent academic transcript.

To apply: <https://initrobots.ca/en/positions>



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