



Gemini



#### PARTNERSHIP PLAN sonia@ens.etsmtl.ca | sonia.etsmtl.ca 2023-2024



ÉCOLE DE TECHNOLOGIE SUPÉRIEURE

Industry Université du Québec



### The team

SONIA, the autonomous submarine club of the École de Technologie Supérieure is celebrating its 25th anniversary in the field of underwater robotics.

The team, comprising approximately twenty student members, excels in crafting autonomous submarines that integrate cutting-edge technological advancements.

What sets SONIA apart, alongside its technical expertise, is its dedication to knowledge sharing and global outreach. Its philosophy is centered around collaboration and open exchange. The sharing of data for AI training and the public availability of the submarine's documentation and code all reflects this ethos.

SONIA employs a collaborative approach, structured around three specialized sub-teams: mechanical, electrical, and software.



The mechanical team is responsible for the design and fabrication of the submarine's hull, as well as internal support systems. Their expertise is crucial to ensure the watertightness and robustness of the submarines.

Once the mechanical aspects are in place, the electrical team takes charge, designing and manufacturing multiple internal systems such as the power distribution systems and the motor control system.

The software team is then responsible to create the software infrastructure that gives to the submarine its functionality. Their work, with the creation SONIA's mission and AI systems, gives to the robots their autonomy.





## The goals

This year, the club has set one main goal: to design and manufacture a brand-new prototype.

The ultimate aim is to showcase this prototype at the 2024 edition of the Robosub competition in August.





# How can you help?

The club is looking for sponsorship in the following areas:

- Financial support:
- Materials (raw aluminium, parts...)
- Service (machining, anodization, manufacturing, ...)
- Acces to pools (for testing opportunites)
- Software licences





# Budget

With the design and construction of a new submarine, the club had to increase its budget, particularly in regards to mechanical manufacturing expenses and the procurement of electronic components and sensors.











## **Advantages and benefits**

#### Impact and visibility

The SONIA club provides you with enhanced visibility within the secondlargest engineering faculty in Canada, responsible for educating over 25% of engineers in Quebec, along with a social media following of 1200 subscribers.



### **Social Impact**

Beyond designing autonomous submarines, the club has also dedicated itself to promoting the fields of science and engineering among young individuals. Your support for the club signifies your dedication to this important social mission.

### **Talent and recognition**

Your support for the club enables your company to gain exposure within a diverse community of talented and passionate students who will soon enter the job market.



## **Funding Chart**

	Value	Logo on the web site	Logo on the banner	Logo on uniforms	Logo on vehicules	Social visibility
Diamond	10 000+				3 years	++++
Platinum	6 000 - 9 999				1 year	++
Gold	3 000 - 5 999				1 year	+
Silver	1 000 - 2 999					
Bronze	1 000 and -					

\*Software partnerships are admissible the platinum tier and below.



### AUV7

Introduced in 2017, AUV7 marked the club's pioneering venture into a cross-shaped submarine design. This unique design is complemented by usage of carbon fiber to create the central hull of the submarine.

Over time, several overhauls were made to enhance the submarine's performance. In 2022, the electrical and software systems underwent a thorough revision to better integrate with AUV8's internal setup.





#### **Features**

- Central 6 layers carbon fiber hull
- 4 anodized aluminum access port for improved robustness
- 2 cameras
- 8 motors
- 6 degrees of freedom
- Navigation sensors: DVL (with pressure sensor), IMU
- Marker system
- On-board computer: Jeston Xavier AGX
  - $\circ~$  8 cores ARM processor @ 2.2 GHz
  - 512 cores graphic accelerator @ 1377 MHz
- Autonomy: 1-2 hours (depending on tasks).







#### **Features**

- Anodized aluminium hull
- 8 motors
- 6 degrees of freedom
- Navigation sensors: DVL, depth sensor, IMU
- Markers system
- Torpedoes system
- On-board computer: Jeston Xavier AGX
  - 8 cores ARM processor @ 2.2 GHz
  - 512 cores graphic accelerator @1377 MHz
- Autonomy : 1-3 h (depending on the tasks).

### AUV8

Originally designed in 2020, AUV8's first participation in the robosub competition took place in 2022 due to health restrictions.

AUV8 follows the concept of a cross-shaped submarine with a few modifications for improvement. The left and right segments of the submarine were shortened to bring the heaviest components closer to the center, thereby increasing the submarine's maneuverability. Carbon fiber was replaced with a fully aluminum hull.







# Become a part of the SONIA family!







The goal is to make technology accessible to everyone and inspire future generations. SONIA aims to share knowledge, inspire young minds by visiting schools and maisons des jeunes, among other activities.

By supporting SONIA, you become a partner in our mission to spread knowledge and innovation. Join SONIA in creating a future where technology is a source of inspiration for all.

 Thank you for your support !

 Altium
 Cégep du

 Vieux Montréal

 Social





DIPLÔMÉS ET PHILANTHROPIE Secrétariat général ASSOCIATION ÉTUDIANTE DE L'ÉTS AEETS



### To contact us :

Club S.O.N.I.A.

Roxanne Parent Thibeault, Capitain École de technologie supérieure 1100, rue Notre-Dame Ouest, D-2014 Montréal (Québec) H3C 1K3 Canada Phone : +1 (514) 396-8800 ext. 7622 <u>sonia@ens.etsmtl.ca</u> <u>sonia.etsmtl.ca/</u>

