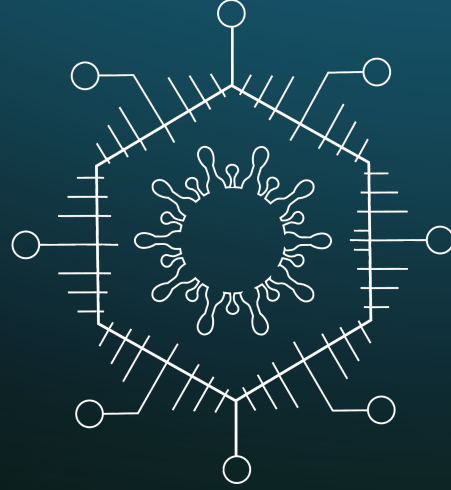




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19-20 August 2023

INTERNATIONAL BIOGATE COMPETITION

BIOSENSOR STAGE

Story of Biosensor

Although detection systems have advanced significantly since they were first used, there is still a great need for systems that can be implemented, accessed, and utilized without the assistance of an expert. We still require fully functional hospitals to monitor our hormonal changes, as well as devices used in projects that are funded by prestigious institutes to detect environmental pollution, identify toxins and allergens in our food, and more. Considering this, academics, researchers, businesses, and students look forward to getting together to work on systems that can fit entire worlds into small devices, biosensors. With the BioGate competition, we provide you with this environment. It serves as a platform for bringing solutions to one of the many problems, for personal growth in various areas, and possibly for the implementation and marketing of your own ideas, the rights to which will be entirely your own and which are unrestricted in their subject matter. Keep going for more!

Biosensor Design

- Participants are expected to develop a portable and field-employable sensor that is capable of providing accurate results within the acceptable range for a particular molecule depending on their preference.
- The molecule to base the biosensor on and sensor systems are not restricted by a topic, however the projects must comply with the criteria stated in this handbook.
- Further details on the samples that are going to be used during the competition are going to be announced in the Biosensor Category handbooks.



Biosensor Development

The biosensor should be developed to benefit human lives rather than just being used for the competition. The following issues should be taken into consideration while developing the biosensor in this setting.

- The ability to function in a way that can be used in everyday life
- Being effective and not being overly difficult to manufacture
- Suitability with green synthesis criteria
- Use of sustainable
- Use of biodegradable materials
- Production with minimum waste (Producing the sensor with minimal damage to nature)
- Portability and field-employability
- Widespread impact (Keeping the sensor production economic and accessible)
- Consideration of whether there is a lower cost and better system in the literature that can accomplish the same function

The following guidelines **must** be followed by participating teams as they create their projects.

- Avoiding dangerous laboratory procedures during the biosensor design and development phases
- Following the biosecurity rules while performing experiments in the lab and measurements with the biosensors

BEFORE THE COMPETITION DAYS

The competition will be scored out of 1000 points. Pre-assessment forms, final reports, and videos will be used to collect information on the projects and devices but will not be scored. Information on the submitted final reports and videos will be evaluated with the following criteria.

Accuracy and Precision

Biosensors will be evaluated for accuracy and precision based on the data specified by the experiments participants have conducted, which will be explained in detail in their submitted report and video.

Speed

The sensor will be scored by comparison to a standard sensor. The measurement period may vary depending on the biosensor (e.g., if the biosensor shortens the typical test duration of two days to five hours, it is considered a successful biosensor in this section).

Novelty

Novelty is assessed by taking into account what was done differently from literature, motivation, creativity, detecting a molecule that has never been detected before with the projects' system, developing a new method, and designing a system utilizing new materials. The biosensor system must be set up a system considering whether it should be a quantitative, semi-quantitative or colourimetric biosensor depending on the molecule will be detected.

Feasibility

The biosensor should not be designed just for competition. It should be able to find a place for itself in the future applications of the sectors and contribute to human life.

ON THE COMPETITION DAYS

Demonstration

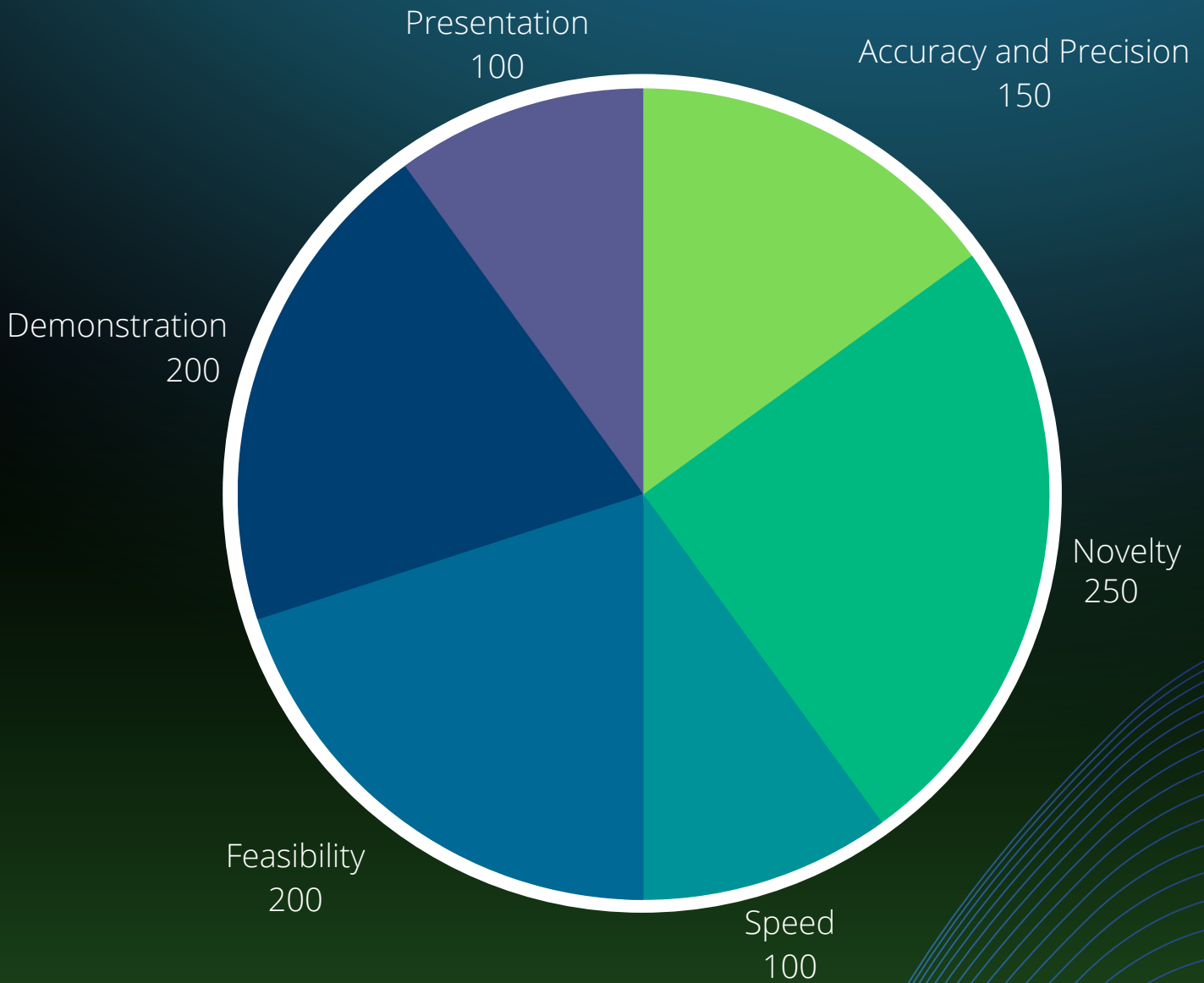
During the competition, biosensors will be used to conduct measurements and be evaluated depending on these measurements. After performing measurements, these results will be compared to the information and previous results teams have included in their final reports and videos for speed, accuracy and precision criteria.

Presentation

Teams are expected to present their projects and provide a clear explanation of the projects and a description of the biosensors to the jury members on the day of the competition and design a poster which summarizes their project.



Scoring



- Gold Category 900-1000 points
- Silver Category 700-899 points
- Bronze Category 600-699 points



Confirmed



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