CASPita
Critical Assessment of Student Programming in Italy
Call 2017

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1 - Aim and Resources

The [Regional Student Group (RSG)-Italy](#) is part of the [International Society for Computational Biology (ISCB)](#). Our purpose is to challenge the italian bioinformatic programmers community with some of the most widespread biological issues. In short term, the goal is to organize the first coding assessment specifically conceived for young italian programmers within the Bioinformatics and Biology areas. The challenge will specifically address topics of interest for the community. The proposed solutions will be evaluated and the best ones will be shared with the community so that everyone will take advantage of the contest.

The long term goals include the creation of a set of simple, well commented and re-usable parsing and processing tools, as well as algorithms, of interest for the whole Biologists and Bioinformaticians network. In addition, the contest will promote the dialogue and discussion on biological problems from the programming point of view, as well as the interaction between the two sides of Bioinformatics: biologists and programmers.

2 - Who can enter the competition

Whoever wants to take on the challenge can apply for the competition, there are no restrictions about participants' background or age.

3 - Content

3.a - Competition object

The aim of the competition is to create a **tool to map exons within corresponding encoded protein sequences and structures**. The tool uses Uniprot accession numbers (mandatory) and PDB files (optional) as inputs, and it can map the location of the exon boundaries, retrieved from Ensembl and UCSC Genome Browser, onto input sequences/structures. When available, species-specific genome sequence databases should be included in the resources used for exon ends definition. The program should be a user-friendly, well commented and re-usable processing tool, which can be easily implemented in fully-automated pipelines. The output must be in txt, tsv or JSON format, and it provides the following information:

- Protein Uniprot accession number;
- Mapped protein residues;
- Protein encoding gene ID (HGNC or Ensembl format);
- Exon ID according Ensembl/UCSC Genome Browser;

- Exon ends mapping onto the protein sequence/ structure;
- Resources employed for mapping (e.g. Uniprot_Ac + PDB; Ensembl);
- Optional: Additional annotation (e.g. Pfam domain).

Tool capabilities and completeness will be evaluated by the biological side of the assessment.

3.b - Prize

The prize for first place is a 100$ amazon coupon, the second place will get the book "**Bioinformatics Challenges at the interface of biology and Computer Science, Mind the Gap**" by Teresa K. Attwood, Stephen R. Pettifer, David Thorn. We will update the information if more prizes will be available.

3.c - Refunds

Refunds are not contemplated since the project doesn't require any specific expense.

4 - How to submit an application

4.a - How

Applications will be submitted as an email to rsg-italy@iscbsc.org, with object "CASPITA <name of the project> <name of the applicant/group>". The email text may contain particular communications or be empty. A confirmation email will be sent back if the project has been successively submitted.

4.b - When

Participants will be able to apply for the announcement, from 15/10/2017, until a week before the project submission deadline. Any application submitted after 15/12/2017 will not be included in the competition. Precise dates will be published on the RSG-Italy Facebook page and will be sent by email to all participants.

4.c - Where

The announcement will be published on the RSG-Italy Facebook page, website and on Twitter. Submission is only possible through email (at the address rsg-italy@iscbsc.org), any submission sent through the facebook page or other means will not be included in the competition.

5 - How to submit the project

Submit the project sending as a compressed archive to: **rsg-italy@iscbsc.org**

6 - How is the assessment done

The submitted proposals will be evaluated by a team composed both of programmers and biologists with limited coding experience. Two members of RSG-Italy leadership will be excluded from the participants and involved in the advertising and evaluation of the competition. They will be flanked by two wet-lab biologists. The so-formed team will ensure that the evaluation will be both from the computational point of view (program speed, memory usage and bugs) and from the point of view of a non-expert user, that will favour well-commented scripts and readable and reusable output. Assessment will be divided into two sections that will equally contribute to the final grade.
The first section will assess program efficiency: execution time and memory usage will be both given a 1-5 score. This part of the grade will be the average of the received scores. Multiplatform tools will get a bonus point on the final grade.
Biologists will be responsible of the second evaluation. They will focus on usage instructions and output readability, as well as on testing the program flexibility with more difficult or specific cases. This section grade will range from 1 to 5.

7 - Publication of the Results

Admission to the competition will be communicated with a confirmation email upon the submission of the application.

Assessment results will be published on the [RSG-Italy](#) [Facebook](#) [page](#), website and on Twitter. All participants will be notified by email. Winner(s) will receive a specific notice.

8 - Prize presentation

The coupon will be sent by email , while the book ("**Bioinformatics Challenges at the interface of biology and Computer Science, Mind the Gap**") will be delivered through ordinary mail to a specified address.

Special commission prize:
The prize will be awarded to the applicant. In the case the project is submitted as a group only one prize will be awarded. The recipient will be decided within the group and communicated to RSG-Italy.

9 - Privacy

Privacy rights are referred to italian law:

Art. 13 del D. Lgs. n. 196 del 30 giugno 2003, "Tutela delle persone e di altri soggetti rispetto al trattamento dei dati personali"

10 - More info

For further information please write to rsg-italy@iscbsc.org or on the facebook page RSG-Italy.