Introduction to the Study of Avian Genetics and Evolution

Bioinformatics Final Project - Winter 2024

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Project Introduction

In this project, you will explore the world of avian genetics and evolution. This initiative provides a platform to apply bioinformatics techniques to real-world biological questions, focusing on genomic mysteries and evolutionary relationships in bird species. You can access to the project's github repository by this link.

Project Tasks

Refer to the README of the github repository.

Methodology and Freedom of Exploration

Throughout these tasks, you are encouraged to employ a variety of bioinformatics tools and approaches. The aim is to foster creativity, problem-solving skills, and the practical application of theoretical knowledge.

GitHub Workflow and Review Process

Manage each task via GitHub for collaborative development and iterative learning. Early completion of tasks will be met with detailed feedback, providing opportunities for further improvement and learning.

Grading and Bonus Structure

Overview

The grading system for this project is designed to recognize and reward in-depth effort, creativity, and adherence to best practices. Each task includes embedded bonus opportunities, and we will also acknowledge any extra depth or analysis that goes beyond the specified task descriptions.

Task Weights and Grading

- **Task Weights**: The weight of each task in the overall grade is not predetermined. Instead, weights will be dynamically allocated during the grading stage. We will use multiple possible combinations to ensure that teams are evaluated on the combination that yields the highest result.

- **Holistic Evaluation**: We aim to assess the team's collective effort. As long as the team functions harmoniously, we will not penalize individual members for uneven contributions. However, if issues are raised by team members regarding unequal participation, they will be taken into consideration.

Multiplicative Bonus Factors

- **Clean Coding**: We strongly encourage clean, modular code with reusable components. Exceptionally well-written code will multiply the task's grade by 1.1, and truly outstanding code by 1.2.
- **Git Best Practices**: Effective use of Git, including good commit practices and clear commit messages, will yield a multiplicative factor of 1.1 on the task's grade.

Overall Grading Structure

- **Base Points**: The project starts with a base of 4 points.
- **Soft-Cap Bonus**: An additional 2 points can be earned by completing task-specific bonus jobs or through the bonus factors mentioned above. This soft-cap bonus can bring the total to 6 points.
- **Extended Bonus Opportunity**: Beyond 6 points, there is room to earn an additional 1.5 points. However, reaching this level will be significantly more challenging, and the normal bonuses will not apply to these additional points.

In-Person Delivery and Individual Assessment

- **Individual Effort Assessment**: The in-person delivery will be the primary venue for assessing individual contributions. This assessment will be graded as Acceptable, Barely Acceptable, or Unacceptable, with multipliers of 1.0, 0.75, and 0.5, respectively.
- **Purpose of Penalty Multipliers**: These multipliers are designed to address situations where an individual team member contributes minimally. It's important to note that these penalties apply to what the team has achieved; if a team's overall performance is not strong, members will not be subject to these penalties.

Resources and Learning Materials

We provide a comprehensive list of resources, including tutorials and documentation for tools like Galaxy, BLAST, and others relevant to the tasks. These resources are designed to support and enrich your learning experience.