Martina Lucà

- Verona, Italy
- (+39) 391 7784794
- martina.luca@univr.it
- Born September 1, 1998
- github.com/martiluca

I started my journey with a Bachelor degree in biotechnology. During this period, my interest in bioinformatics applied to genomics grew. I'm currently a Computer Science Ph.D. student working on developing and testing algorithms for computational biology. During my Ph.D. I will also work with variant calling applied to pangenomics. I want to continue to connect my interest in biology and my skills in computer science. I am proficient in Python and C++ and have experience working in remote bash shell environments.

EDUCATION

Oct 2024 – Current

Ph.D. in Computer Science | **University of Verona**

Sep 2024

PhD school on Evolution in Computational Pangenomics | **Como**
Participated in a network-wide summer school of the MSCA-RISE Project PANGAIA, focusing on the evolutionary aspects of pangenomics and the computational analysis of tumor, virus, and bacteria populations.

Oct 2021 – Mar 2024

Master's Degree
Molecular and Medical Biotechnology | **University of Verona**
Thesis: *Parameters for Prefix-Free Parsing: Analysis and Experimentation*
Advisors: Zs. Lipták, F. Masillo
Final Grade: 110/110L

Jan 2023 – Apr 2023

Erasmus+ Blended Intensive Program | **University of Granada**
The program combined remote activities and a short physical mobility (16/03-22/04) at the University of Granada. Three universities participated: University of Verona (Italy), Universität für Bodenkultur Wien, BOKU (Austria) and Universidad de Granada (Spain). The students were placed in international groups and presented a review during the workshop in Granada. The topic of my group was "*Remediation of heavy metals: traditional technologies, bioremediation and new perspectives.*"

Oct 2017 – Mar 2021

Bachelor's Degree
Biotechnology | **University of Insubria**
Thesis: *Bioarchaeological analysis of osteological finds from the crypt of the church of Santa Maria Maggiore in Vercelli*
Advisor: M. Licata
Final Grade: 103/110

Sep 2012 – Jul 2017

High School Diploma | **Liceo Scientifico Paolo Giovio di Como**
Project: Conway's Game of Life. Thesis and recreation of the cellular automaton using an LED matrix and Arduino.

RESEARCH EXPERIENCE

Oct 2023 – Oct 2024

Research Fellow | ARC NET - University of Verona

During my fellowship under Prof. A. Scarpa, I performed bioinformatic analysis of next-generation sequencing samples from tissues using a multigenic panel based on hybridization capture technology. I focused on debugging and optimizing a variant calling pipeline, automating processes through script development, and evaluating the efficiency of tools and resources used. Additionally, I conducted analyses on samples and collaborated with the team to discuss results and address any issues that arose.

`Python / Snakemake / R / Bash`

Aug 2023 – Mar 2024

Thesis intern | University of Verona

Study of the Prefix-Free Parsing algorithm. In particular, I focused on evaluating the importance of the choice of parameters (modulus m and window size w) and the impact they have on the final size of dictionary ($|D|$) and parse ($|P|$). To do this, I used several genetic libraries as datasets, both real and artificially created so that I could check sequence similarity and evaluate its impact on $|D|$ and $|P|$.

`C++ / Python / LaTeX`

Lug 2023 – Aug 2023

Intern | University of Verona

The objectives of the internship were to deepen knowledge on textual indices and improve programming skills. In particular, I was involved in optimizing the Binary Search phase (using LCPs and RMQs) in the context of an algorithm for computing Matching Statistics. The results were published in an international conference.

`C++ / Python`

Dec 2020 – Mar 2021

Thesis intern | University of Insubria

Analysis of the findings of the crypt of the church of Santa Maria Maggiore in Vercelli with the aim of obtaining information regarding the population found and analyzing what may be found in a similar archaeological context. To achieve these objectives, the biological profile of each indiviual was reconstructed and the events, both pathological and taphonomic, that led to its current state of preservation were reconstructed.

`Excel / LaTeX`

Jun 2016

Intern | Polytechnic University of Milan

Short internship focused on providing basics of programming in Python and basic use of Arduino.

`Python / C++ / Arduino`

WORK EXPERIENCE

2022 – 2023

Students' Tutor | University of Verona

Tutor for students with learning disorders and secretarial work in the University's Inclusion Office.

`Excel`

2019 – 2021

Students' Tutor | University of Insubria

Tutor for students with learning disorders, secretarial work and students' orientation.

`Excel / Esse3`

SKILLS

Technical Skills:

- Operating Systems (Windows, Mac, Linux)

- Common programs (Office suite)

- Programming:
  - C++ - Good
  - Python - Proficient
  - Git - Good
  - html/css - Basic
  - Markup languages (LaTeX, markdown) - Proficient

Language Skills:

- English: C1

PUBLICATIONS

Aug 2024	**Title:** *Fast matching statistics for sets of long similar strings* **Status: published at PSC 2024** Authors: Zs. Lipták, **M. Lucà**, F. Masillo, S. Puglisi

VOLUNTEERING

Dec 2022 – Nov 2024	**Italian Red Cross** **| Verona** Volunteer mainly in social work (organizing warehouse for food distributions, food collections, elderly shopping service). During the summer of 2024, I also obtained the OPEM (Emergency Operator) qualification.
May 2021 – Aug 2021	**Elidog (Animal Shelter)** **| Carbonate (CO)** Responsible for walking dogs and providing training for a reactive dog, focusing on improving its behavior and socialization skills.