

Mattia Sgrò

XXXIX CYCLE, PHD CANDIDATE · COMPUTER SCIENCE

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Education

University of Milano - Bicocca

Milano, Italy

PHD COMPUTER SCIENCE

2023 - present

- Supervisor: Prof. Gianluca Della Vedova, Co-Supervisor: Prof. Paola Bonizzoni
- Topics: text indexing, pattern matching, positional Burrows-Wheeler Transform, plasmid binning via ILP on graphs, graph algorithms, pangenomic, computational biology, data structures, bioinformatics

University of Milano - Bicocca

Milano, Italy

MS COMPUTER SCIENCE

2020 - 2023

- 110/110 cum laude
- Thesis: Algorithms for the positional BWT with missing data and applications for haplotype analysis.
- Advisors: Prof. Paola Bonizzoni, Prof. Raffaella Rizzi

University of Milano - Bicocca

Milano, Italy

BS COMPUTER SCIENCE

2017 - 2020

- 105/110
- Thesis: Research algorithms (pBWT) extensions on haplotype matrixes to integrate gaps.
- Advisors: Prof. Paola Bonizzoni, prof. Yuri Pirola

Professional Experience

- 10-2025 **Research Fellow**, doc. RNDr. Tomáš Szemes, PhD. - Geneton, Comenius University in Bratislava, Slovakia
- 06-2025 **Research Fellow**, professor Benedict Paten - University of California - Santa Cruz (UCSC), U.S.
- 02/05-2025 **Research Fellow**, professor Kunihiro Sadakane - The University of Tokyo (Tokai), Tokyo, Japan
- 07/09-2024 **Research Fellow**, professor Kunihiro Sadakane - The University of Tokyo (Tokai), Tokyo, Japan
- 06-2024 **Research Fellow**, professor Cedric Chauve - Simon Fraser University (SFU), Vancouver BC, Canada
- 08/10-2023 **Research Fellow**, professor Cedric Chauve - Simon Fraser University (SFU), Vancouver BC, Canada
- 2019-2023 **Graduate Research Fellow**, "Efficient Algorithms for Haplotype Panels indexing", BIAS Lab (former AlgoLab), University of Milano - Bicocca, Milano, Italy

Publications

PUBLISHED

Bonizzoni, P., Della Vedova, G., Pirola, Y., Rizzi, R., & **Sgrò, M.** 2023. Multiallelic maximal perfect haplotype blocks with wildcards via pbwt. In International Work-Conference on Bioinformatics and Biomedical Engineering (pp. 62-76). Cham: Springer Nature Switzerland.

IN REVIEW

Sgro, M., Brejova B., Pirola Y., Vinar T., Bonizzoni P. and Chauve C. "Pangebin: improving plasmid binning in bacterial isolates using pangenome-assembly graphs"

Sgrò, M., Riccardi, B., Ciccolella, S., Cozzi, D., Della Vedova, G., Sadakane, K., and Bonizzoni, P. (2026). "On optimizing the positional Burrows-Wheeler transform via sampling"

Epain, V., Mane, A., **Sgrò, M.**, Della Vedova, G., Bonizzoni, P., and Chauve, C. (2026, May). "A multi-flow approach for binning circular plasmids from short-reads assembly graphs."

Presentations

INVITED TALKS

March 2024. *PangeBin - Pangenome graphs improve bacterial plasmid binning in short-read assemblies*. Data Structures in Bioinformatics (DSB 2024), Montpellier.

September 2024. *PangeBin - Pangenome graphs improve bacterial plasmid binning in short-read assemblies*. Methods for Interfacing with Graphs of Genomic Sequences (MIGGS 2024), Lille.

CONTRIBUTED PRESENTATIONS

Sgro, M., Brejova B., Vinar T., Bonizzoni P. and Chauve C. July 2024. Poster Session: International Conference on Intelligent Systems for Molecular Biology (ISMB 2024). Montreal

Bonizzoni, P., Della Vedova, G., Pirola, Y., Rizzi, R., & **Sgrò, M.** June 2023. International Work-Conference on Bioinformatics and Biomedical Engineering (IWBBIO 2023). Gran Canaria

Teaching Experience

- 04-05/2024 **Laboratorio di Informatica I [E3001Q074]**, Teaching Activity, Dept. of Physics "Giuseppe Occhialini" - University of Milano - Bicocca
- 04-10/2024 **Laboratorio di Supporto ai Percorsi di Tesi**, Teaching Activity, Dept. of Informatics, Systems and Communication, University of Milano - Bicocca
- 03-06/2026 **Informatica Giuridica [2526-1-E1402A005-MZ]**, Professor, School of Law, University of Milano - Bicocca

Tutoring Experience

- 03-06/2026 **Percorso di formazione docenti delle scuole secondarie di secondo grado (60 cfu) - A41**, Tutor Informatico, Dept. of Informatics, Systems and Communication, University of Milano - Bicocca
- 10/2025 **Informatica ed elementi di machine learning [E141PV002]**, Tutor, Dept. of Law, University of Milano - Bicocca
- 10/2025 **Modelli e Computazione [F1802Q151]**, Tutor, Dept. of Informatics, Systems and Communication, University of Milano - Bicocca
- 04-12/2025 **Percorso di formazione docenti delle scuole secondarie di secondo grado (60 cfu) - A41**, Tutor Informatico, Dept. of Informatics, Systems and Communication, University of Milano - Bicocca
- 07-12/2024 **Percorso di formazione docenti delle scuole secondarie di secondo grado (60 cfu) - A41**, Tutor Informatico, Dept. of Informatics, Systems and Communication, University of Milano - Bicocca
- 04-10/2024 **Tutorato di Supporto ai Percorsi di Tesi**, Tutor, Dept. of Informatics, Systems and Communication, University of Milano - Bicocca
- 2022-2023 **Tutorato Matricole dei Corsi di Informatica Triennale e Magistrale**, Tutor, Dept. of Informatics, Systems and Communication, University of Milano - Bicocca

Other activities

SERVICE AND OUTREACH

- 06-2026 **PNRR activity "Studiare il DNA con Python"**, Teaching Activity *Milan, Italy*
- 11-2024 **PNRR activity "Io e il Genoma"**, Teaching Activity, Triennio dell' I.I.S. G.B. Vico *Corsico, Italy*
- 2021-2022 **Rappresentate degli Studenti Residenti**, Residenza U12, University of Milano - Bicocca *Milano, Italy*

WORKSHOPS, CONFERENCES AND SCHOOLS

CPM 2025, June 2025. Organizing committee of Combinatorial Patter Matching 2025, Milan.

COPA 2024, September 2024. PhD school on Evolution in Computational Pangenomics

ALPACA-PANGAIA annual workshop, November 2023. CWI University in Amsterdam.