Luca Denti

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EDUCATION

Doctor of Philosophy in Computer Science	Nov. 2016 – Oct. 2019
University of Milano - Bicocca	*Milano, Italy*

- Thesis: "Algorithms for analyzing genetic variability from Next-Generation Sequencing data"
- Supervisors: Prof. Paola Bonizzoni, Dr. Raffaella Rizzi, Dr. Marco Previtali

Master's Degree in Computer Science	Nov. 2014 – Oct. 2016
University of Milano - Bicocca	*Milano, Italy*

- Thesis: "A new algorithmic approach for the approximate alignment of a string to a graph"
- Supervisors: Prof. Paola Bonizzoni, Dr. Raffaella Rizzi

Bachelor's Degree in Computer Science	Oct. 2011 – Oct. 2014
University of Milano - Bicocca	*Milano, Italy*

- Thesis: "Development of an enhanced Petri Net simulator"
- Supervisors: Dr. Luca Bernardinello, Prof. Lucia Pomello

AWARDS

- Best Poster Award, RECOMB2018

OPEN SOURCE SOFTWARE

ASGAL | *C++, Python*	asgal.algolab.eu
MALVA | *C++*	algolab.github.io/malva
Shark | *C++*	github.com/AlgoLab/shark
MALVIRUS | *Snakemake, Python, Bash*	algolab.github.io/MALVIRUS
ppvcf | *C++*	ldenti.github.io/ppvcf

EXPERIENCE

Postdoctoral Researcher	Sep. 2020 – Present
Institut Pasteur	*Paris, France*

- Supervisor: Dr. Rayan Chikhi

Research Fellowship (8 months)	Jan. 2020 – Aug. 2020
University of Milano - Bicocca	*Milano, Italy*

- Project: "Algorithms to detect alternative splicing events"
- Supervisor: Dr. Yuri Pirola

Professional partnership (14 days)	Nov. 2019
University of Milano - Bicocca	*Milano, Italy*

- Computer Science Lab and DNA Analysis 2019

Visiting Period	Feb. 2019 – Apr. 2019
Life Sciences and Health group, CWI	*Amsterdam, The Netherlands*

- Supervisor: Leen Stougie

Visiting Period	Oct. 2018 – Dec. 2018
Life Sciences and Health group, CWI	*Amsterdam, The Netherlands*

- Supervisor: Alexander Schönhuth

Substitute teaching (8 hours) - Computer Science	Dec. 2017
High School "B. Russell"	*Garbagnate Milanese, Italy*

Professional partnership (2 months)	2017
University of Milano - Bicocca	*Milano, Italy*

- Pattern matching on pangenome
- Supervisor: Prof. Paola Bonizzoni

Activity of data entry on CRM	2013
Dos&Donts S.r.l.	*Rho, Italy*

Teaching Experience

Teaching assistant 2016 – Present
University of Milano - Bicocca *Milan, Italy*

- Programming Language Laboratory, *Bachelor's Degree in Statistics* (a.y. 2019/2020)
- Foundations of Computer Science, *Master's Degree in Data Science* (a.y. 2019/2020)
- Design and Analysis of Algorithms, *Bachelor's Degree in Computer Science* (a.y. 2016/2017, 2017/2018, 2018/2019, 2019/2020)
- Algorithms and Data Structure, *Bachelor's Degree in Computer Science* (a.y. 2016/2017, 2019/2020)

Cosupervisor of undergraduate final project 2016 – Present
University of Milano - Bicocca *Milan, Italy*

- Detecting novel exons with enhanced splicing graphs, C++ implementation (a.y. 2019/20)
- Greedy MEM-based alignment to splicing graphs (a.y. 2019/20)
- Read alignment to a multi-gene splicing graph (a.y. 2018/19)
- Detecting novel exons with enhanced splicing graphs, python implementation (a.y. 2018/19)
- Detection of Local Splicing Variation via alignment to a splicing graph (a.y. 2017/18)
- Comparison of tools for alternative splicing analysis (a.y. 2017/18)
- Comparison of tools for read alignment (a.y. 2016/17)

Publications

Joint first/last authors are indicated with *. Any preprint is marked with a †.

8. L. Denti*, Y. Pirola*, M. Previtali*, T. Ceccato, G. Della Vedova, R. Rizzi, P. Bonizzoni. Shark: fishing relevant reads in an RNA-Seq sample. Bioinformatics (2020)

7. S. Ciccolella, G. Bernardini, P. Bonizzoni, M. Previtali, G. Della Vedova. Triplet-based similarity score for fully multi-labeled trees with poly-occurring labels. Bioinformatics (2020)

6. † S. Ciccolella*, L. Denti*, P. Bonizzoni, G. Della Vedova, Y. Pirola*, and M. Previtali*. MALVIRUS: an integrated web application for viral variant calling. bioRxiv (2020)

5. L. Denti*, M. Previtali*, G. Bernardini, A. Schönhuth, P. Bonizzoni. MALVA: genotyping by Mapping-free ALlele detection of known VAriants. Iscience (2019)

4. S. Beretta, L. Denti, M. Previtali. Graph Theory and Definitions. Encyclopedia of Bioinformatics and Computational Biology (2019)

3. S. Beretta, L. Denti, M. Previtali. Network Properties. Encyclopedia of Bioinformatics and Computational Biology (2019)

2. L. Denti, R. Rizzi, S. Beretta, G. Della Vedova, M. Previtali, P. Bonizzoni. ASGAL: aligning RNA-Seq data to a splicing graph to detect novel alternative splicing events. BMC Bioinformatics (2018)

1. S. Beretta, P. Bonizzoni, L. Denti, M. Previtali, R. Rizzi. Mapping RNA-seq data to a transcript graph via approximate pattern matching to a hypertext. International Conference on Algorithms for Computational Biology. Springer (2017)

Talks

4. Dynamic quasi-minimal perfect hash function for k-mers. DSB2020

3. MALVA: genotyping by Mapping-free ALlele detection of known VAriants. BITS2019

2. MALVA: genotyping by Mapping-free ALlele detection of known VAriants. RECOMBSEQ2019

1. Mapping RNA-seq data to a transcript graph via approximate pattern matching to a hypertext. AlCoB2017

Posters

2. MALVA: genotyping by Mapping-free ALlele detection of known VAriants. RECOMB2019

1. ASGAL: aligning RNA-Seq data to a splicing graph to detect novel alternative splicing events. RECOMB2018

Professional Activities

Peer-Reviewer

Journals:

- Bioinformatics, Nucleic Acids Research, F1000Research

Conferences:

- WABI (2019,2020), ISBRA (2018,2020), BIBM (2018), BICOB (2018), SPIRE (2017), ICCS (2017)

Technical Skills

Languages: C/C++, Python, Java, Bash, LaTeX
Frameworks: Snakemake
Developer Tools: Git, Docker
Libraries: biopython, gffutils, pysam, pandas, NumPy, Matplotlib, Seaborn

References

Prof. Paola Bonizzoni, University of Milano - Bicocca   paola.bonizzoni@unimib.it
Prof. Alexander Schönhuth, University of Bielefeld   aschoen@cebitec.uni-bielefeld.de