Antonio Mallia

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Work experience

2018–present **PhD Fellow**, *New York University*, New York, US.
Teaching Assistant for Web Search Engines (Fall 2018)

Jun–Aug 2019 **Applied Scientist Intern**, *Amazon*, Barcelona, Spain.
Working in the Search team

2016–2018 **Software Engineer**, *Bloomberg L.P*, London, United Kingdom.
Working in the Collaboration Frameworks team on a distributed architecture, and ensuring reliability, scalability and performance. Working in an Agile team, doing software development/testing, code optimization and code review. Learned how to work with large volumes of real-time data, and how to develop software in a large-scale, fast-paced environment.
Detailed achievements:
- Involved in the design and development of a tagging and sharing framework.
- Designed and refactored code following the microservice paradigm.
- Created a Continuous Integration infrastructure to automate build, tests and deployment.
- Migrated the build system to use the more modern CMake.
- Introduced static code analysis and code coverage to run on the codebase.
- Investigated and debugged production environment issues caused by software defects, system configuration errors, and data inconsistencies.

2013–2016 **Software Engineer**, *NIC .it - National Research Council*, Pisa, Italy.
Worked for the Italian National Research Council on projects for the ccTLD .it Registry.
Detailed achievements:
- Developed several features of the main application used by NIC .it domain name registrars. Focused on database query optimization, export of data, third-party web-services integration.
- Co-operated on the development of an internal application, used by administrative staff to manage contracts and billing system. Focused on UX enhancement, data presentation and export.
- Co-operated on the development of an ETL system and presentation of data using interactive charts.
- Developed a UI library for JavaServer Faces (JSF) application and integration with the main NIC applications.
- Planned and developed an e-voting system used for the election of the Registry steering committee.

2011–2016 **Software Engineer**, *Self-Employed*, Remote.
Worked as a freelancer remotely and on personal projects.
Detailed achievements:
- Planned and developed a web application providing web privacy and anonymity tools: user management, load balancing, payment integration (Paypal, Bitcoin, credit card gateway, phone). Design of a RESTful API for third-party integration.
- Mail server configuration and administration.
- Google Chrome and Mozilla Firefox extension development to integrate features of a web application.
- Planned and developed a CMS to perform feed aggregation using parsing technics and categorisation.
- Software prototyping of a crawling and parsing system of an airline company to extract flight information and post-analysis.
- Developed a ad-hoc download manager software, including packaging for Windows and OS X.
- Owned an Italian blog network about technology widely-read and realised using Wordpress. Development of several plugins, integration with advertising agency web services. System administration main focused on performance optimisation.

Education

2018–present **Ph.D. Program in Computer Science**, *New York University*.
Pursuing a Ph.D. with a focus on advancing efficiency in Information Retrieval for large-scale systems.

2018–2020 **Master's degree in Computer Science**, *New York University*.

Relevant exams:
- Machine Learning
- Natural Language Processing
- Graphics Processing Units (GPUs): Architecture and Programming
- Big Data
- Deep Learning

2014–2015 **Master's degree in Computer Science**, *University of Pisa*, 110/110 cum laude.

This Master's Degree in Computer Science provided me a solid, in-depth background, in line with the innovation needs of the informatics field. The courses attended increased my knowledge portfolio, in both the theoretical and practical aspect.

Thesis: *Efficient top-k document retrieval with two level indexes. Supervisor: Prof. Rossano Venturini*

Relevant exams:
- *Advanced Algorithms*
- *Advanced Database Systems*
- *Advanced Programming*
- *Computational Models*
- *Distributed Systems: paradigms and models*
- *Numerical Methods and Optimization*
- *Principle of Programming Languages*

2012–2013 **Erasmus Programme**, *University of Essex*.

This experience enabled me to understand the value of studying and working in an international environment. Exploring practice-oriented learning methods improved my professional skills.

Relevant exams:
- Programming in Java
- Web Technologies & XML
- Large Scale Software Development & Extreme Programming
- Network Laboratory
- Photonics Networks & Devices
- Mobile Robotics
- Programming Embedded Systems
- Electronic System Design & Integration

2008–2012 **Bachelor's degree in Electronic Engineering**, *University of Pisa*.

I acquired knowledge of methodological aspects of mathematics and basic disciplines to understand and provide appropriate solutions to engineering problems. During the Curriculum in Electronic Engineering I developed professionally with sound fundamental and multidisciplinary skills ranging from electronics, circuit theory, systems theory, computer science, communications, control theory, economics, electromagnetism, nanoelectronics.

Publications

Antonio Mallia, Michal Siedlaczek, Mengyang Sun, and Torsten Suel. **A Comparison of Top-k Threshold Estimation Techniques for Disjunctive Query Processing**. In *Proceedings of the 29th ACM International Conference on Information and Knowledge Management (CIKM)*, 2020.

Jimmy Lin, Joel Mackenzie, Chris Kamphuis, Craig Macdonald, Antonio Mallia, Michal Siedlaczek, Andrew Trotman, and Arjen de Vries. **Supporting Interoperability Between Open-Source Search Engines with the Common Index File Format**. In *Proceedings of the Conference on Research and Development in Information Retrieval (SIGIR)*, 2020.

Antonio Mallia, Michal Siedlaczek, Torsten Suel, and Mohamed Zahran. **GPU-Accelerated Decoding of Integer Lists**. In *Proceedings of the 28th ACM International Conference on Information and Knowledge Management (CIKM)*, 2019.

Antonio Mallia, Michal Siedlaczek, Joel Mackenzie, and Torsten Suel. **PISA: Performant Indexes and Search for Academia**. In *Proceedings of the Open-Source IR Replicability Challenge (OSIRRC) co-located with SIGIR*, 2019.

Antonio Mallia and Elia Porciani. **Faster BlockMax WAND with Longer Skipping**. In *Proceedings of the European Conference on Information Retrieval (ECIR)*, 2019.

Antonio Mallia, Michal Siedlaczek, and Torsten Suel. **An Experimental Study of Index Compression and DAAT Query Processing Methods**. In *Proceedings of the European Conference on Information Retrieval (ECIR)*, 2019.

Joel Mackenzie, Antonio Mallia, Matthias Petri, J. Shane Culpepper, and Torsten Suel. **Compressing Inverted Indexes with Recursive Graph Bisection: A Reproducibility Study**. In *Proceedings of the European Conference on Information Retrieval (ECIR)*, 2019.

Melanie Tosik, Antonio Mallia, and Kedar Gangopadhyay. **Debunking Fake News One Feature at a Time**. *CoRR*, abs/1808.02831, 2018.

Antonio Mallia, Giuseppe Ottaviano, Elia Porciani, Nicola Tonellotto, and Rossano Venturini. **Faster BlockMax WAND with Variable-sized Blocks**. In *Proceedings of the Conference on Research and Development in Information Retrieval (SIGIR)*, 2017.

Other research activities

- PC member for CIKM 2020 Resource Track
- PC member for ECIR 2020
- Reviewer for ACM Transactions on the Web (TWEB)
- External reviewer for KDD 2018, KDD 2019, KDD 2020

Books

Antonio Mallia and Francesco Zoffoli. **C++ Fundamentals**. Packt Publishing. 2019

Languages

Italian	**Native**	
English	**Professional working proficiency**	*TOEFL iBT: 105 (C1)*

Computer skills

OS:	Mac OS X, Linux and Windows.
Programming:	Java, C++, C, Python, Javascript, PHP.
Database:	MySQL, MongoDB, SQLite, Redis.
Web Design:	HTML5, CSS3, jQuery.
Development Environment:	Eclipse, Sublime Text, PyCharm, IntelliJ IDEA, Clion, Vim.

Project Management:	SVN, Git, Trac, Gitlab.	Continuous Integration:	Jenkins, Travis CI.
Web Server:	Apache, Lighttpd, Jetty, JBoss AS.	Container engine:	Docker.
Framework	Seam, Dropwizard, SlimPHP.	Mail:	Postfix, Dovecot.
Documentation:	Markdown, Latex.	CMS:	Wordpress, Ghost.

Invited Talks and Tutorials

04/2016	**Backend for Android Developers** , *Droidcon Italy*, Turin.	
10/2017	**C++: unexpected behaviour**, *Topconf*, Düsseldorf.	
11/2017	**C++: unexpected behaviour**, *Meeting C++*, Berlin.	

Awards and Grants

2020 **CIKM Student Travel Grant**, *issued by ACM SIGIR.*

2019 **ESSIR Scholarship**, *issued by the Italian Association for Artificial Intelligence.*

Personal skills

Leadership Good experience in team management acquired training and guiding a blog network editorial staff.