FRANCESCO TOSONI

M.Sc. in Computer Science

@ francitosoni@gmail.com +39 389 5088245 Via degli olivi, 4 I-06029 Valfabbrica (PG), ITALY
in linkedin.com/in/francesco-tosoni github.com/SuperNabla95

EDUCATION

M.Sc. in Computer Science and Networking (EQF 7)

Università di Pisa *and* Scuola Superiore Sant'Anna

Nov 2017 – Mar 2020

The M.Sc. course in CS&N was a joint initiative of TeCIP institute (Scuola Sant'Anna) and the University of Pisa (Computer Science and Information Engineering departments). The course was conducted in English, with many international students. Main interests:

- Algorithm design, analysis and implementation
- Big Data analytics, Search Engines & Information Retrieval
- High performance Computing (HPC) and Parallel Computing (in particular: multi-thread)
- Networking (protocols, components, configuration & management), JUNOS network operating system, optical fibers

Thesis title: "*Algorithms and data structures for efficient ride sharing platforms*". Advisors: P. Ferragina, A. Marino. Date: 6th March 2020. Score: 110/110 *cum laude*.
Achieved 5 times the score 30/30 *cum laude*.
Served as a *student representative* for the Master's course (2018-2020).

B.Sc. in Computer and Electonic Engineering (EQF 6)

Università di Perugia

Sep 2014 – Oct 2017 Perugia, Italy

Bachelor courses:

- Foundations of Telecommunication, Signal Processing & Automation
- Algorithms, Databases & Computer programming: `Java` (mainly) and `C`
- Foundations of Antennas & Electronic circuities

Thesis title (translated): "*Implementation of a distributed graph clustering algorithm on the Giraph platform according to the TLAV paradigm*". Advisor: E. Di Giacomo. Date: 27th October 2017. Score: 110/110 *cum laude*.
Achieved 7 times the score 30/30 *cum laude*.

High school degree (EQF 4)

Liceo Scientifico annesso al convitto nazionale "Principe di Napoli"

Sep 2009 – Lug 2014 Assisi, Italy

Attended public High School of Science "Principe di Napoli" in Assisi (`www.convittoassisi.com`). At final examination I presented a survey about criptographic methods. Score: 100/100

CURRENT POSITION

Research scholarship

Università di Pisa, CS Department

June – October 2020 Pisa, Italy

Title: *Algorithms and data structures for urban mobility platforms*. Duration: 5 months.
I am currently working on graph-based algorithmic solutions for vehicle routing and mobility problems.

INTERNSHIPS

Summer intern

EPLASS

August 2014 Würzburg, Bayern, Germany

Summer traineeship at EPLASS Project Collaboration Gmbh, an internet-based software developing company working with several countries all over the world. Worked with the `C#` Programming language.

Summer intern

Flyeralarm, Druckhaus Mainfranken

August 2014 Würzburg, Bayern, Germany

Intern at Flyeralarm GmbH, an online printing brand present in 15 european countries. During the internship I assisted different departments (i.e. customer phone calls, printing, manufacturing).

LANGUAGE SKILLS

Italiano (Italian) ●●●●●
mother tongue

English ●●●●○
B2 Certificate. Center for Applied Linguistics (CLA) of UNIPG, Perugia (Italy), July 2017

German ●●●○○
B1 Certificate. Center for Applied Linguistics (CLA) of UNIPG, Perugia (Italy), July 2017

PROGRAMMING LANGUAGES

Good knowledge of **Java**, **C/C++** (c++11 and c++17), and **Python 3**. I have also worked occasionally with: Python 2, Go, and Haskell.

PROJECTS

Algorithms and data structures for efficient ride sharing platforms

Master's thesis research fellow

Apr 2019 – Feb 2020 Pisa, Italy

Implementation of a novel locality filtering technique which is able to speed up matching computations for urban mobility problems. The proposed algorithm and data structure solve the ride sharing problem by significantly improving both the time and the space complexities. The thesis work has seen a collaboration with researchers at *CNR* (Pisa, Italy) and *MIT Senseable City Lab* (Boston, Massachusetts).

Parallel versions of the Particle Swarm Optimization method

Parallel and distributed programming course

Fall 2019 Pisa, Italy

Study for a map-reduce parallelization of the PSO procedure for the localization of a minimum within a 2-D plane. The parallel versions have been realized using: (1) `c++` threads, as well as (2) the FastFlow parallel framework. The experiments have been executed on a *Intel Xeon Phi* machine (64 cores, 4-way hyper-threading).

SPADE – Sensing, Processing and Analyzing Data in an Embedded IoT Device

Wireless networks of embedded systems course

Spring 2019 Pisa, Italy

Design and deployment of a machine-learning powered system for the predictive maintenance of machines based on a Beagleboard green and an accelerometer.

Implementation of a distributed graph clustering algorithm

Bachelor's thesis

Fall 2017 Perugia, Italy

Distributed implentation of the LPAm clustering algorithm on top of the Apache Giraph platform. The programming paradigm of the Giraph library is "Think like a vertex" (TLAV), which aims at ecploit better locality in data access and communications.

HOBBIES

I swim regularly. In the past I enjoyed playing music (piano and alto sax). In my free time, I like studying European history (in particular: late Roman, middle age, and modern periods) and playing strategy video games.

HACKATHONS

First Ascent 2018 finalist
Selected from 400+ applicants for the participation in *First Ascent 2018*

FA18 (Copenhagen, Denmark) was a coding challenge event organized and sponsored by Bending Spoons, an innovative leading startup in the field of app development (especially for the iOS). 20 Italian top tech students coming from many universities in Italy (Bologna, Cagliari, Padova, Pisa, Roma, Trento), England (Cambridge, Oxford, Imperial College London) and Germany (TUM) participated in the event. See: `firstascent.io`

HackTheAlps, #weagainstvirus 2020, 3rd prize
Awarded 3rd prize with *Pharma-Q* application prototype

Taken part in a coding competition organized in Bozen/Bolzano, Südtirol. Together with other teams we proposed software solutions and ideas to assist local communities during the health emergency of *Covid-19*. We proposed an AI-enabled web service to monitor queues at the entrance of the pharmacies of Bozen/Bolzano, using data acquired through surveillance cameras. See: `hackthealps.it/weagainstvirus`

INTERESTS

intelligent transportation systems
graph algorithms | route optimization
data compression | big data
multicriteria data structures

AWARDS

- €1500 - Awarded the **"Best Graduate Award" (Master in CS & Networking)** based on the best graduation grade, exam grades (GPA) and least amount of time spent to graduate, reserved for graduates from cohort 2017/2018 graduating in the academic year 2018/2019 .

OTHERS

- European Computer Driving Licence (ECDL)
- B – car driving licence

Pisa, 14th October 2020