

**Sara**  
Grassi

## WORK EXPERIENCE

10/2020 - CURRENT - Ferrara, Italy

● **Mathematics teacher (for exercises)**

Architecture department - UNIFE

11/2019 - CURRENT - Ferrara, Italy

● **PhD student**

Department of Mathematics and Computer Science - University of Ferrara

10/2019 - CURRENT - Modena, Italy

● **Mathematics teacher (for exercises)**

Life science department - UNIMORE

05/2015 - 11/2019 - Reggio Emilia, Italy

● **Waitress**

Restaurant "Piccolo Paradiso"

09/2013 - CURRENT - Reggio Emilia, Italy

● **Mathematics and Physic private teacher**

10/2019 - CURRENT - Modena, Italy

● **Mathematics teacher (for exercises)**

Department of chemical and geological sciences - UNIMORE

09/2014 - 06/2016 - Reggio Emilia, Italy

● **Volley Coach**

ASD Invicta

02/2015 - 02/2016 - Modena, Italy

● **Secretary**

Physics department - UNIMORE

09/2013 - 05/2015 - Reggio Emilia, Italy

● **Waitress**

Restaurant "Le Cicogne"

06/2012 - 08/2012 - Scandiano (RE), Italy

● **Apprenticeship**

Panciroli Tendaggi srl

06/2011 - 08/2011 - Scandiano (RE), Italy

● **Apprenticeship**

L'isola che non c'è srl

## EDUCATION AND TRAINING

09/2017 - 10/2019 - Modena, Italy

● **Master's degree in Mathematical Science**

Department of Mathematics - University of Modena and Reggio Emilia

"Modelli di ottimizzazione non convessa per la compressione e la ricostruzione di immagini" | EQF level 7

09/2018 - 02/2019 - Murcia , Spain

● **Erasmus experience**

Universidad de Murcia,

Study of subjects related to the application of mathematics to computer science

10/2013 - 04/2017 - Modena, Italy

● **Bachelor's degree in Mathematical Science**

Department of Mathematics - University of Modena and Reggio Emilia

"Risoluzione di problemi geometrici elementari attraverso l'utilizzo dell'Origami" | EQF level 6

09/2008 - 06/2013 - Reggio Emilia, Italy

● **Industrial Technical Institute certificate, Computer science specialization**

ITG "Blaise Pascal"

**General:** Italian, English History and Philosophy Physics and Maths

**Occupational:** Computer science ( programming languages as C, Pascal, Assembly, HTML, Javascript, AJAX, PHP, Database management with MySQL, Networks management,...) Economy

EQF level 5

LANGUAGE SKILLS

**MOTHER TONGUE(S): Italian**

**English**

Listening  
**B2**

Reading  
**B2**

Spoken  
production  
**B1**

Spoken  
interaction  
**B1**

Writing  
**B1**

**Spanish**

Listening  
**C1**

Reading  
**B2**

Spoken  
production  
**C1**

Spoken  
interaction  
**C1**

Writing  
**B1**

DIGITAL SKILLS

Microsoft Word | Microsoft Excel | Outlook | Google Drive | C | CSS | HTML | JavaScript | SQL | Matlab (Basic) | LaTeX (Intermediary) | Turbo Pascal | PHP (intermediate) | Julia | Basics Of Python

## COMMUNICATION AND INTERPERSONAL SKILLS

### ● **Communication skills**

Good communication skills gained working in the restaurant;

Ability to communicate in other languages such as English and Spanish acquired through Erasmus experience in Spain;

Teaching skills acquired through my experience as private teacher and at the university;

### ● **Organisational / managerial skills**

Team-leading skills acquired in the restaurant where i am responsible for 10 others waiters;

Organisational skills gained in the apprenticeship, working as secretary;

## PROFESSIONAL INTEREST

### ● **About Me**

For my master's thesis I worked on imaging problems that involve the use of different gradient properties and gradient methods. Subsequently I started working under the supervision of Professor Pareschi on a new CBO method that exploits the physical behavior of a particle system in order to identify the global minimum of non-convex functions in high dimension. Currently, my mathematical interests are more focused on applying mean-field and kinetic theory in different areas and in particular in machine learning.

### ● **Research Topics**

Partial differential equations, kinetic theory, ordinary differential equations, data analysis, gradient's methods, imaging, machine learning

#### **11/2019 - CURRENT**

### ● **Work in progress**

An article entitle "Stochastic and mean- field modelling of particle swarm optimization" with my advisor Lorenzo Pareschi

## PUBLICATIONS

### ● **From particle swarm optimization to consensus based optimization: stochastic modeling and mean-field limit**

**2020** <https://arxiv.org/abs/2012.05613>