

# Ruggero Freddi

Circonvallazione Appia 7  
00179, Rome, Italy  
☎ (+39)3473425501  
✉ info@ruggerofreddi.it

## General informations

Age 43  
citizenship Italian

## Education

- 2016 - 2020 **Università di Roma "La Sapienza" - Dipartimento di Scienze di Base e Applicate per l'Ingegneria (SBAI)**, Rome, Italy, *PhD in Modelli Matematici per l'Ingegneria, Elettromagnetismo e Nanoscienze*. Thesis: *Morse Index of Multiple Blow-Up Solutions to the Two-Dimensional Sinh-Poisson Equation*.
- 2013-2016 **Università di Roma "La Sapienza"**, Rome, Italy, *"Laurea Magistrale" in Mathematics* (M.Sc. equivalent). Final grade: 110 with honours/110 (full marks with highest distinction). Thesis: *Esistenza di Soluzioni per Alcuni Problemi Ellittici "Fully Nonlinear"*.
- 2010-2013 **Università di Roma "La Sapienza"**, Rome, Italy. *"Laurea" in Mathematics* (B.Sc. equivalent). Final grade: 110 with honours/110 (full marks with highest distinction). Thesis: *Trasformata di Fourier e Principi di Indeterminazione*.
- 1996-2003 **Università di Roma "La Sapienza"**, Rome, Italy. *"Laurea" in Computer Engineering* (B.Sc. + M.Sc. equivalent). Final grade: 103/110 (second class honours upper division equivalent). Thesis: *Active vision. Focalization in an Artificial Visual System*.

## Work experience

- 2003-2004 Arci Nuova Associazione. Work description: LAN administrator and web master.
- 2002-2003 ALCOR Group. Work description: Researcher in the artificial intelligence field and cognitive vision.

## Teaching

- 2016-2017 Tutor on Analisi II for Ingegneria Edile/Architettura and Ingegneria Meccanica. Università di Roma "La Sapienza".
- 2017-2018 Lecturer on Analisi I for Ingegneria Clinica. Università di Roma "La Sapienza".
- 2017-2018 Tutor on Analisi I for Ingegneria Clinica. Università di Roma "La Sapienza".
- 2018 Lecturer on Precorsi di Matematica for Ingegneria. Università di Roma "La Sapienza".
- 2018-2019 Lecturer on Analisi I for Ingegneria Clinica. Università di Roma "La Sapienza".
- 2018-2019 Lecturer on Analisi II for Ingegneria Clinica. Università di Roma "La Sapienza".
- 2019 Lecturer on Precorsi di Matematica for Ingegneria. Università di Roma "La Sapienza".
- 2019-2020 Tutor on Analisi I for Ingegneria Clinica. Università di Roma "La Sapienza".

## Publications

Preprint <https://arxiv.org/pdf/2001.02137.pdf>

## Research Interests

**Mathematical Analysis:** Classical and weak solutions to partial differential equations, especially for the elliptic case. Differential equations defined by semi-linear and fully non-linear elliptic operator, condition for the existence of solutions. Calculus of the Morse index for solutions to semi-linear elliptic equations.

**Physics:** Schrödinger equation, solutions to Schrödinger equation in the case of free particle, harmonic oscillator and point interaction. Weak, strong and local form of Heisenberg uncertainty principle.

**Informatics:** Machine learning, neural networks and genetic algorithms. Cognitive vision and focalization of the attention systems for visual inference. Image multi-scale analysis for the environment recognition and the human-machine interaction. Lossy and lossless data compression.

---

## Languages

|         |        |
|---------|--------|
| Italian | Native |
| English | Fluent |
| Spanish | Fair   |

---

## Awards and Scholarships

|           |  |
|-----------|--|
| 2016      | PhD scholarship, Università di Roma "La Sapienza" - Dipartimento di Scienze di Base e Applicate per l'Ingegneria (SBAI). |
| 2013      | "Percorso d'eccellenza" scholarship, Università di Roma "La Sapienza" - Dipartimento di Matematica.                      |
| 1998-2002 | Adisu scholarship.   |

---

## Moreover

|           |                         |
|-----------|-------------------------|
| 2000-2003 | Faculty Representative. |
| 2018      | PhD Representative.     |
| 2018-2021 | Faculty Representative. |
| 2019      | 24-CFU Certificate.     |