Luigi Belli

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GOAL

Career in data science and astrophysics and cosmology possibly in:

- Fundamental Research
- Applied space science
- Industrial Research and Development

SKILLS

Python - **R** - **SQL** - **Bash** - **Linux [Ubuntu/Arch]** - **Deep Learning** - **Dask, Apache, Kafka** -

PROJECTS

Bachelor Thesis - Formazione di sistemi binari buco nero-stella: il caso di Gaia BH1 e Gaia BH2.

- Analysis of possible formation path of specific Blach Hole - star binary objects discovered in Gaia Data Release 2.
- Scientific data analysis with **Pandas**
- Data Visualization con **Matplotlib, Seaborn**

Hierarchical Mergers of Black Holes

- Scientific data analysis with **Pandas** to infer on best condition for high generation binary black holes merge to happen.
- Machine Learning (**Random Forest**, **XGBoost**)

Galaxy Classifier using CNN

- Automating process of galaxy morphology classification using Neural Networks and Machine Learning tools.
- Deep Learning, Convolutional Neural Networks (**Pytorch**, **Optuna**)

Various Deep Learning Algorythms

- Feed Forward Neural Networks (**Scikit-Learn**, **Keras**)
- Restricted Boltzmann Machines
- Clustering

EDUCATION

University of Padua
Student of Physics of Data *2024-*

Study plan

- Laboratory of Computational Physics, Mod A
  - Project: Hierarchical Mergers of Black Holes
- Laboratory of Computational Physics, Mod. B
  - Project: Galaxy Classifier using a CNN
- Management and Analysis of Physics Datasets Mod. A & B
- General Relativity [Notes]
- Mathematical and Numerical Methods
- Machine Learning
- Observational Cosmology
- Astroparticle Physics
- Compact Objects Astrophysics
- Astro-Statistics and Cosmology
- Information Theory and Inference
- Modern Computing For Physics
- Neural Networks and Deep Learning
- Gravitational Physics
- Computational Astrophysics

University of Padua
Bachelor in Astronomy *2019-2024*

- Thesis: Formazione di sistemi binari buco nero-stella: il caso di Gaia BH1 e Gaia BH2. Supervisor: Prof. Giuliano Iorio. Co-supervisor: Prof.ssa Sara Rastello.

Other

- EAS 2024 Padua - Volunteer
- 2023 High Energy Astrophysics International Data Camp

INTERESTS

Julia - **Sewing clothes and accessories** -