ALLEGATO 2A
IV VERBALE

BUSTA F

Discutere come creare un ambiente di sviluppo software comune per utenti con diverse necessità e diversi meccanismi di accesso.

ALLEGATO 2B
IN VERBALE

BUSTA 1

1. Antivirus e firewall: discutere cosa sono, a cosa servono, e dove è bene installarli.

Functional data analysis (FDA) is a rising subject in recent scientific studies and daily life, which analyzes data with information about curves, surfaces, or anything else over a continuum, such as time, spatial location, and wavelength which are commonly considered in physical background, and each sample element of functional data is a random function defined on this continuum [38, 19]. In practice, our goal is to utilize these functional data to learn the relationship between the input function and the response, which can be either scalar or functional. On the other hand, deep learning has shown its great empirical success on various datasets such as audio, image, text and graph, due to its great power of automatically feature extraction based on data, and its flexibility on the architecture design for varieties of data formats. Therefore, it is a straightforward idea to consider applications of deep learning in FDA, and recently there are many researches concerning this approach. For example, for solving parametric partial differential equations (PDEs), [22, 27] aim at learning the map between the parametric function space and the solution space by the operator neural networks. There are also many attempts on image processing tasks with neural networks, such as phase retrieval [15], image super-resolution [35], image inpainting [36], and image denoising [52].

ALLEGATO 3A
IN VERBALE

BUSTA D

Descrivere quali misure si possono prendere per garantire la sicurezza di un centro informatico di medie dimensioni, considerando attacchi esterni, malfunzionamenti e rotture, eventi catastrofici.

ALLEGATO 3B
IN VERBALE

BUSTA 2

2. Raccolta, elaborazione e analisi di quantità ridotte di dati: quali software possono essere utilizzati e perché.

The exploration of nuclear mass or binding energy, a fundamental property of atomic nuclei, re- mains at the forefront of nuclear physics research due to limitations in experimental studies and uncertainties in model calculations, particularly when moving away from the stability line. In this work, we employ two machine learning (ML) models, Gaussian Process Regression (GPR) and Sup- port Vector Regression (SVR), to assess their performance in predicting nuclear mass excesses using available experimental data and a physics-based feature space. We also examine the extrapolation capabilities of these models using newly measured nuclei from AME2020 and by extending our calculations beyond the training and test set regions. Our results indicate that both GPR and SVR models perform quite well within the training and test regions when informed with a physics- based feature space. Furthermore, these ML models demonstrate the ability to make reasonable predictions away from the available experimental data, offering results comparable to the model calculations. Through further refinement, these models can be used as reliable and efficient ML tools for studying nuclear properties in the future.

ALLEGATO 4A
N VERBALE

BUSTA A

Si espongano le principali caratteristiche di GPU e FPGA ed in particolare le analogie e differenze e loro utilità nel campo del calcolo HPC, Machine Learning e Data Mining.

ALLEGATO 4B
IN VERBALE

BUSTA B

Si discuta il ruolo della rete nei moderni centri di calcolo, e in particolare le necessità dei centri HPC e HTC.

ALLEGATO 4C
N VERBALE

BUSTA C

Esporre i concetti base della virtualizzazione e discutere che cosa si intende con OS-level e HW-level

ALLEGATO 4D
IN VERBALE

BUSTA E

Discutere le possibili interfacce utente per accesso alle risorse di calcolo, con particolare attenzione ai meccanismi di autenticazione e autorizzazione.

ALLEGATO 4E
N VERBALE

BUSTA 3

3. Office automation: che cosa si intende con questo termine e quali software rientrano in questa categoria

Real-time traffic flow prediction holds significant importance within the domain of Intelligent Transportation Systems (ITS). The task of achieving a balance between prediction precision and computational efficiency presents a significant challenge. In this article, we present a novel deep-learning method called Federated Learning and Asynchronous Graph Convolutional Network (FLAGCN). Our framework incorporates the principles of asynchronous graph convolutional networks with federated learning to enhance the accuracy and efficiency of real-time traffic flow prediction. The FLAGCN model employs a spatial-temporal graph convolution technique to asynchronously address spatio-temporal dependencies within traffic data effectively. To efficiently handle the computational requirements associated with this deep learning model, this study used a graph federated learning technique known as GraphFL. This approach is designed to facilitate the training process. The experimental results obtained from conducting tests on two distinct traffic datasets demonstrate that the utilization of FLAGCN leads to the optimization of both training and inference durations while maintaining a high level of prediction accuracy. FLAGCN outperforms existing models with significant improvements by achieving up to approximately 6.85% reduction in RMSE, 20.45% reduction in MAPE,
compared to the best-performing existing models.