

CV Ivan Letteri

INFORMAZIONI PERSONALI

I am a Research Fellow with completed 3 years of PostDoc in Computer Science, a PhD in Engineering and Computer Science, and Master's with 110 CUM LODE and Bachelor's Degrees with 110 CUM LODE in Computer Science.

Machine Learning, Artificial Intelligence, Algorithmic Trading, Statistical Analysis, Technology Enhanced Learning, Green Economy.

During my academic years, I gained a lot of experience in Python programming, designing and developing software in Python for trading online with my own personal framework called AITA (Artificial Intelligence Trader Agent) on which I run trading systems automatically. Furthermore, this framework is powered by green energy from photovoltaic panels. I have developed applications for data mining and systems analysis for computer security. I have also developed predictive algorithms for the spread of COVID19.

OCCUPAZIONE PER LA QUALE
SI CONCORRE
POSIZIONE RICOPERTA
OCCUPAZIONE DESIDERATA
TITOLO DI STUDIO
OBIETTIVO PROFESSIONALE

- Assegnista di ricerca
- Ricercatore universitario
- studi intrapresi in Computer Science
- obiettivo professionale Ricercatore universitario

ESPERIENZA
PROFESSIONALE

Research scholarship
(May 2023 - July 2023)

Develop of Machine Learning models and software for medical and technology-enhanced learning

paper submission to Mis4tel (PAAMS23)

- developing of an adaptive tool supporting formative assessment in data science courses.
- Exploratory Data Analysis for Technology Enhanced Learning dataset

at the University of L'Aquila (MesVA department)

3rd year - PostDoc Research
Fellow

(May 2022 - April 2023)

Design and implementation of a tool for time series analysis of the price of DeFi tokens in decentralised finance using inferential statistics, machine learning and computational logic"

- Verification and testing phase of trading activity on assets derived from DeFi tokens,
- exploration analysis phase of the data collected as a result of the simulations,
- platform design and development for trading systems.

at the University of L'Aquila (DISIM department)

Nominated Expert in the Subject
(January 2023 – In progress)

in course Artificial Intelligence: a Practical Introduction, projects evaluated on topic:

"Learning component in projects with AI agents

- Hybrid systems with a learning component (Neural Networks, Genetic Algorithms, Decision Tree).
- Applications in Decision & Planning contexts (e.g., Minedfield game).
- Computer vision applied in Graph Theory contexts (e.g., Cliques recognize).
- Recommender system for travelling preferences.

at the University of L'Aquila (DISIM department)

Nominated Expert in the Subject -
Teaching Activities

(May 2022 – In progress)

lectures in course Intelligent Systems and Robotics Laboratory on topic:
“Introduction to Computer Vision with PyTorch

- Tensor theory, PyTorch basics,
- tutorials with case studies.
- autonomous driving simulator exercise with CARLA Simulator software.
- Project to recognize people with YOLO model.
- Path recognition with Lego Mindstorms EV3 Robotics, a rescue traffic managing for ambulances

at the University of L'Aquila (DISIM department)

2nd year - PostDoc Research
Fellow

(May 2021 - April 2022)

Design and implementation of a tool for time series analysis of the price of
DeFi tokens in decentralised
finance using inferential statistics, machine learning and computational logic”

at the University of L'Aquila (DISIM department)

Nominated Expert in the Subject

(November 2021)

Lectures in course Intelligent Systems and Robotics Laboratory on topic:
“Introduction to Computer Vision with Neural Networks”

- Neural networks theory,
- exercitation with case study.

at the University of L'Aquila (DISIM department)

1st year - PostDoc Research
Fellow

(October 2019 - October 2020)

Development of Malware Detection techniques based on Machine Learning”

- Optimisation phase of the project realised during the PhD,
- balancing phase with 'synthetic' data from the dataset created for the PhD thesis.
- Develop and design of a new Oversampling algorithm called G1No (Generative 1 Nearest Neighbor)

at the University of L'Aquila (DISIM department)

Research and Develop activity

(from 15 November 2020 - to 15
December 2020)

for the agency Next S.r.l. for the project

- statistical analysis and creation of predictive machine learning models,
- application development for interfacing.

at the University of L'Aquila (DISIM department)

Research Doctorate (PhD)

(October 2016 - October 2019)

Performance Improvement Strategies for Malware Traffic Detection with
Machine Learning Model

- 1st year: Deep Learning for Controller in Software Defined Networks,
- 2nd year: Deep Learning optimization for Malware Traffic analysis,
- 3rd year: Algorithm design and development for dataset oversampling and malware traffic dataset generation.

at the University of L'Aquila (DISIM department)

Research scholarship

(April 2016 - October 2016)

Security Network in Software Defined Network

- design phase virtualisation environment for malware analysis with Mininet framework and Ryu Controller,
- Software development phase for the simulation of malicious traffic in Software-Defined networks.

at the University of L'Aquila (DISIM department)

Research scholarship

(May 2013 - September 2013)

Front end for mobile application for university secretariat queue management

- mobile environment design phase,
- mobile web interface software development phase.

at the University of L'Aquila (DISIM department)

ISTRUZIONE E FORMAZIONE



data conseguimento 2020	PhD in Ingegneria dell'Informazione University of L'Aquila Thesis: <i>Performance Improvement Strategies for Malware Traffic Detection with Machine Learning Model</i>	AP
data conseguimento 2016	Master degree in Computer Science University of L'Aquila Study of security issues for RESTful servers and services	110/110 CUM LODE
data conseguimento 2013	Bachelor degree in Computer science University of L'Aquila Sostituire con un elenco delle principali materie trattate o abilità acquisite	110/110 CUM LODE
data conseguimento 2014	Master in Web Technology University of L'Aquila	CUM LODE

COMPETENZE PERSONALI

Lingua madre Italiano

Altre lingue

	COMPRENSIONE		PARLATO		PRODUZIONE SCRITTA
	Ascolto	Lettura	Interazione	Produzione orale	
Inglese	B1	B1	B1	B1	B1

Livelli: A1/A2: Utente base - B1/B2: Utente intermedio - C1/C2: Utente avanzato
 Quadro Comune Europeo di Riferimento delle Lingue

Competenze progettuali

Starting research project - **2022**
Framework for the algorithmic trading with Green Power Energy

POSTER presentation AITA project - **2022**

SAFE project - **2021**
Sustainable design of intelligent furniture systems with life-saving function during seismic events

Technical Collaboration - **2018**
Leonardo S.p.A. and Univaq, regarding ML-DL for Botnet traffic analysis

Cyber Trainer project - **2016**
Demonstrator of operator environments in the cyber-range.

Secure Fiscal Credits - **2022**
Implementation of a demonstrator for the management of Superbonus 110% with Multi Agent System (MESA) on Algorand Blockchain

Toscana COVID - **2020**
Implementation of predictive algorithms for the spread of COVID19 in the Tuscany region

Data collector application for Ethical Chatbot - **2021**
Development of an application to collect a dataset for training an ethical agent

Competenze organizzative e gestionali

- School of AI Italy Association - 2021 founder member with advisory role.
 - Summer school - 2019 Big ML study at the University of Valentia.

Competenze professionali

- Winter school - 2019 NECS at the University of Trento.
- Summer school - 2018 CyberCrime at the University of Milano Bocconi.
- Winter school - 2017 NECS at the University of Trento
- Languages Strong reading, writing and speaking competencies for English.
- Coding Python, Java, PHP, SQL, XML/XSL, LATEX.
- Databases MySQL, PostgreSQL, SQLite, MongoDB, Redis.
- Web Dev Html, css, JavaScript, Apache Web Server, Nginx, WSGI, ASGI.
- Misc. Academic research, teaching, training, LATEX typesetting and publishing.

Competenze digitali

AUTOVALUTAZIONE				
Elaborazione delle informazioni	Comunicazione	Creazione di Contenuti	Sicurezza	Risoluzione di problemi
Intermediate	Intermediate	Intermediate	Advanced	Intermediate

Livelli: Utente base - Utente intermedio - Utente avanzato

[Competenze digitali - Scheda per l'autovalutazione](#)

Reviewer Activities

- 2023-UAAI-0098 for [Journal] Applied Artificial Intelligence - 'Machine Learning approach for Financial Market' (<https://www.tandfonline.com/toc/uaii20/current>)
- ECAI2023 for [Conference] 26th European Conference on Artificial Intelligence ECAI 2023 Kraków, Poland (<https://ecai2023.eu/>)
- ESWA2023 for [Journal] Expert Systems With Applications, topic: trading system using deep neural network (<https://www.sciencedirect.com/journal/expert-systems-with-applications>)
- CHIItaly2023 for [Conference] Crossing HCI and AI Turin, ITALY - 20-22 September 2023 (<https://chitaly2023.it/>)

Teaching Activities

Seminar 19 December 2023

A gentle introduction to Machine Learning models:

"A set of ML model " slides [HERE](#)

- Performance Metrics for Regression and Classification, Dataset Splitting, Linear and Logistic Regression,
- Decision Tree, Random Forest, Data Distribution, Data Visualization, Lab exercises with Python, etc..

Seminar 13 December 2023

Exploratory Data Analysis for Machine Learning:

"A set of best practices before choosing an ML model " slides [HERE](#)

- No-Free Lunch Theorem, Imputation, Data Correlation, Resampling,
- Data Distribution, Data Visualization, etc...

Seminar 25 May 2023

Introduction to Large Language models and applications:

"ChatGPT under the hood "

- Transformer architectures, tokenization, token embedding,
- positional encoding, softmax for the probability distribution, etc...

Activity orientation middle school 6 March 2023 - 17 April 2023

lectures in course Artificial Intelligent and Real Applications on topic:

- Machine Learning, Deep Learning,
- Language programming.
- Autonomous driving, virtual reality, augmented reality.
- Robotics, Cognitive computing.

Seminar April 2018

lecture for Cyber Challenge project at Roma La Sapienza on the theme:

"Malware traffic analysis"

- malware behavioural analysis theory and detection tools,
- case study exercise.

Seminars 4 November 2018 and 21 January 2019

lecture for STEM project Pescara on the topic:

"From Mathematical Logic to Artificial Intelligence"

- example of first and second order logic,
- exercise with Prolog language.

Cycle of Seminars May 2019

lecture for Cyber Challenge project at Roma La Sapienza on the theme:
 "Malware Traffic Detection"
 – malware behavioural analysis theory,
 – exercise with identification tools.

Co-supervisor Activities

(2023) Co-Supervisor in Master Thesis in Information Engineering/Mathematics
 (Karyna Milovska):
 Deep learning for cryptocurrency forecasting

(2023) Supervisor in Bachelor Thesis in Computer Science
 (Mattia Peccerillo):
 Identification of dispensers using Augmented Reality through integration of the Yolo algorithm on Microsoft HoloLens

(2019) Co-Supervisor in Master Thesis in Engineering and Information Science
 (Luca Di Vita):
 Deep Reinforcement Learning applied to Cyber Security: an automatic approach to training neural networks for malware recognition

(2019) Co-Supervisor in Master Thesis in Computer Science
 (Yaseen Khan Tanoli):
 Reinforcement Learning for threat assessment

(2019) Co-Supervisor in Master Thesis in Computer Science
 (Nicholas Angelucci):
 Feature Selection for HTTP botnet detection

(2019) Co-Supervisor in Bachelor Thesis in Computer Science
 (Matteo Ficorilli):
 SDN pentestkit a framework for malware traffic analysis Training Activities

(2018) Co-Supervisor in Bachelor Thesis in Computer Science
 (Davide Fischione):
 Penetration Testing of a Mobile Health application by SDN net

(2018) Co-Supervisor in Bachelor Thesis in Computer Science
 (Davide Palombo):
 DetectTAP a virtual test access port application

(2017) Co-Supervisor in Bachelor Thesis in Computer Science
 (Cristina Costantini):
 Front End application for e-health

(2016) Co-Supervisor in Master Thesis in Computer Science
 (Massimo Del Rosso):
 Performance Botnet Detection with Neural Network in SDN

Patente di guida

B type

ULTERIORI INFORMAZIONI

Pubblicazioni
 Presentazioni
 Progetti
 Conferenze
 Seminari
 Riconoscimenti e premi
 Appartenenza a gruppi /
 associazioni

[Journals] Publications

- Letteri, Ivan et al. (2020). "Security in the internet of things: botnet detection in software-defined networks by deep learning techniques". In: 15.3-4. Corresponding Author: Ivan Letteri, pp. 170–182. doi: 10.1504/IJHPCN.2019.106095. url: <https://doi.org/10.1504/IJHPCN.2019.106095>.
 - De Gasperis, Giovanni, Letteri et al. (June 2023). "Extension of constraint-procedural logic-generated environments for deep Q-learning agent training and benchmarking". In: exad032. doi: 10.1093/logcom/exad032. eprint: <https://academic.oup.com/logcom/advance-article-pdf/doi/10.1093/logcom/exad032>.

Referenze
Menzioni
Corsi
Certificazioni

1093 /logcom/exad032/50530031/exad032.pdf. url: <https://doi.org/10.1093/logcom/exad032>.

[Conferences] Publications

- Letteri, Ivan, Massimo Del Rosso, et al. (2018). "Performance of Botnet Detection by Neural Networks in Software-Defined Networks". In: Proceedings of the Second Italian Conference on Cyber Security, Milan, Italy, February 6th - to - 9th, 2018. Ed. by Elena Ferrari et al. Vol. 2058. CEUR Workshop Proceedings. Corresponding Author: Ivan Letteri. CEUR-WS.org. url: <http://ceur-ws.org/Vol-2058/paper-03.pdf>.

- Letteri, Ivan et al. (2018). "Botnet Detection in Software Defined Networks by Deep Learning Techniques". In: Cyberspace Safety and Security. Ed. by Arcangelo Castiglione et al. Corresponding Author: Ivan Letteri. Cham: Springer International Publishing, pp. 49–62. isbn: 978-3-030-01689-0. doi: 10.1007/978-3-030-01689-0_4.

- Lauretis, Lorenzo De et al. (2019). "An ontology to improve the first aid service quality". In: 2019 IEEE International Conference on Systems, Man and Cybernetics, SMC 2019, Bari, Italy, October 6-9, 2019. IEEE, pp. 1479–1483. doi: 10.1109/SMC.2019.8914460. url: <https://doi.org/10.1109/SMC.2019.8914460>.

- Letteri, Ivan et al. (2019). "Feature Selection Strategies for HTTP Botnet Traffic Detection". In: 2019 IEEE European Symposium on Security and Privacy Workshops, EuroS&P Workshops 2019, Stockholm, Sweden, June 17-19, 2019. Corresponding Author: Ivan Letteri. IEEE, pp. 202–210. doi: 10.1109/EuroSPW.2019.00029.

- Dyoub, Abeer, Stefania Costantini, Francesca Alessandra Lisi, et al. (2020). "Logic-based Machine Learning for Transparent Ethical Agents". In: Proceedings of the 35th Italian Conference on Computational

- Logic - CILC 2020, Rende, Italy, October 13-15, 2020. Ed. by Francesco Calimeri et al. Vol. 2710. CEUR Workshop Proceedings. Corresponding Author: Ivan Letteri. CEUR-WS.org, pp. 169–183. url: <http://ceur-ws.org/Vol-2710/paper11.pdf>.

- Letteri, Ivan (2020). "[PhD Thesis] Performance Improvement Strategies for Malware Traffic Detection with Machine Learning Models". PhD thesis. L'Aquila, Italia: University of L'Aquila.

- Letteri, Ivan, Giuseppe Della Penna, Luca Di Vita, et al. (2020). "MTA-KDD'19: A Dataset for Malware Traffic Detection". In: Proceedings of the Fourth Italian Conference on Cyber Security, Ancona, Italy, February 4th to 7th, 2020. Ed. by Michele Loreti and Luca Spalazzi. Vol. 2597. CEUR Workshop Proceedings. Corresponding Author: Ivan Letteri. CEUR-WS.org, pp. 153–165. url: <http://ceur-ws.org/Vol-2597/paper-14.pdf>.

- Dyoub, Abeer, Stefania Costantini, Ivan Letteri, and Francesca A. Lisi (Sept. 2021). "A Logic-based Multi-agent System for Ethical Monitoring and Evaluation of Dialogues". In: vol. 345. Open Publishing Association, pp. 182–188. doi: 10.4204/eptcs.345.32. url: <http://dx.doi.org/10.4204/EPTCS.345.32>.

- Dyoub, Abeer, Stefania Costantini, Francesca A. Lisi, I. Letteri (2021). "Ethical Monitoring and Evaluation of Dialogues with a MAS". In: Proceedings of the 36th Italian Conference on Computational Logic, Parma, Italy, September 7-9, 2021. Ed. by Stefania Monica and Federico Bergenti. Vol. 3002. CEUR Workshop Proceedings. Corresponding Author: Ivan Letteri. CEUR-WS.org, pp. 158–172. url: <http://ceur-ws.org/Vol-3002/paper13.pdf>.

- Letteri, Ivan, Antonio Di Cecco, et al. (2021). "Imbalanced Dataset Optimization with New Resampling Techniques". In: Intelligent Systems and Applications. Ed. by Kohei Arai. Corresponding Author: Ivan Letteri. Cham: Springer International Publishing, pp. 199–215. isbn: 978-3-030-82196-8.

- Dyoub, Abeer et al. (2022). "Care Robots Learning Rules of Ethical Behavior Under the Supervision of an Ethical Teacher (Short paper)". In: ed. by Pierangela Bruno et al. Vol. 3281. CEUR Workshop Proceedings. CEUR-WS.org, pp. 1–8. url: <http://ceur-ws.org/Vol-3281/paper1.pdf>.

- Letteri, Ivan et al. (2022). "New Optimization Approaches in Malware Traffic Analysis". In: Machine Learning, Optimization, and Data Science. Ed. by Giuseppe Nicosia et al. Corresponding Author: Ivan Letteri. Cham: Springer International Publishing, pp. 57–68. isbn: 978-3-030-95467-3.

- Angelone, Annalisa et al. (2023). "First Evaluation of an Adaptive Tool Supporting Formative Assessment in Data Science Courses". In: Methodologies and Intelligent Systems for Technology Enhanced Learning, 13th International Conference, MIS4TEL 2023, Guimaraes, Portugal, 12-14 July 2023. Vol. 764. Lecture Notes in Networks and Systems. Springer, pp. 144–151. doi: 10.1007/978-3-031-41226-4_15.

- Letteri, Ivan (2023). "AITA: A new framework for Trading Forward Testing with an Artificial Intelligence Engine". In: Corresponding Author: Ivan Letteri. CINI, Ital-IA2023 Pisa CNR. url: <https://www.ital-ia2023.it/submission/107/paper>.

- Letteri, Ivan et al. (2023). "Trading Strategy Validation Using Forwardtesting with Deep Neural Networks". In: Proceedings of the 5th International Conference on Finance, Economics, Management and IT Business - FEMIB, Corresponding Author: Ivan Letteri. INSTICC. SciTePress, pp. 15–25. isbn:

978-989-758-646-0. doi: 10.5220/0011715300003494. url: <https://www.slideshare.net/ivanletteri/femib-slidespdf>.

- Letteri, Ivan (In Publication). "Stock Market Forecasting Using Machine Learning Models Through Volatility-Driven Trading Strategies". In: Proceedings of the 6th International Conference on Finance, Economics, Management and IT Business - Volume 1: FEMIB. INSTICC. SciTePress, pp. 96–103. isbn: 978-989-758-695-8. doi: 10.5220/0012607200003717.

[In] Publications

- Letteri, Ivan (2023). "VolTS Augmented: An Improvement of a Volatility-based Trading System to Forecast Stock Markets". In: Corresponding Author: Ivan Letteri. CINI, Ital-IA2024 Napoli - Federico II. url: <https://ital-ia2024.it/submission/538/paper>.

- Ivan Letteri, Abeer Dyoub (2024). "Leveraging Bio-Inspired Optimization Algorithms for Advanced Feature Selection in Chronic Disease Datasets". In: Corresponding Author: Ivan Letteri. CINI, Ital-IA2024 Napoli - Federico II. url: <https://ital-ia2024.it/submission/538/paper>.

- Letteri, Ivan and Pierpaolo Vittorini (2024). "Exploring the Impact of LLM-Generated Feedback: Evaluation from Professors and Students in Data Science Courses". In: url: <https://www.mis4tel-conference.net/>.

[Pre-print] Publications

- Letteri, Ivan, Antonio Di Cecco, Abeer Dyoub, et al. (2020). "A Novel Resampling Technique for Imbalanced Dataset Optimization". In: vol. abs/2012.15231. arXiv: 2012.15231. url: <https://arxiv.org/abs/2012.15231>.

- Letteri, Ivan et al. (2020). "Dataset Optimization Strategies for Malware Traffic Detection". In: vol. abs/2009.1134 arXiv: 2009.11347. url: <https://arxiv.org/abs/2009.11347>.

- Letteri, Ivan, Giuseppe Della Penna, et al. (2022a). "A Stock Trading System for a Medium Volatile Asset using Multi Layer Perceptron". In: arXiv: 2201.12286 [q-fin.ST]. url: <https://arxiv.org/pdf/2201.12286.pdf>.

– (2022b). "DNN-ForwardTesting: A New Trading Strategy Validation using Statistical Timeseries Analysis and Deep Neural Networks". In: vol. abs/2210.11532. doi: 10.48550/arXiv.2210.11532. arXiv: 2210.11532. url: <https://doi.org/10.48550/arXiv.2210.11532>.

- Letteri, Ivan (2023). "VolTS: A Volatility-based Trading System to forecast Stock Markets Trend using Statistics and Machine Learning". In: arXiv: 2307.13422 [q-fin.TR].

- Letteri, Ivan et al. (2023). "Secured Fiscal Credit Model: Multi-Agent Systems And Decentralized Autonomous Organisations For Tax Credit's Tracking". In: arXiv: 2311.01584 [cs.MA].

Dati personali

Autorizzo il trattamento dei miei dati personali ai sensi del Decreto Legislativo 30 giugno 2003, n. 196 "Codice in materia di protezione dei dati personali".

il sottoscritto dichiara di essere consapevole che il presente *curriculum vitae* sarà pubblicato sul sito istituzionale dell'Ateneo, nella Sezione "Amministrazione trasparente", nelle modalità e per la durata prevista dal d.lgs. n. 33/2013, art. 15.

Data

30 July 2023