



**Giulia  
Varriano**

## ISTRUZIONE E FORMAZIONE

**2010 – 2015** – Via Veneto, Campobasso, Italia

**Diploma Indirizzo Programmatori**  
ISTITUTO TECNICO ECONOMICO "L.PILLA"

**2015 – 2018** – C.da Fonte Lappone, Pesche, Italia

**Laurea Triennale in Informatica**  
UNIVERSITÀ DEGLI STUDI DEL MOLISE

**2018 – 2020** – C.da Fonte Lappone, Pesche, Italia

**Laurea Magistrale in Sicurezza dei Sistemi Software**  
UNIVERSITÀ DEGLI STUDI DEL MOLISE

**2019 – 2019**

**24 CFU PER LA SCUOLA**  
UNIVERSITÀ DEGLI STUDI DEL MOLISE

**2020 – ATTUALE** – Via F. De Sanctis, Campobasso, Italia

**Dottorato in Medicina Traslazionale e Clinica - XXXVI  
corso**  
UNIVERSITÀ DEGLI STUDI DEL MOLISE

## COMPETENZE LINGUISTICHE

**LINGUA MADRE:** italiano

**ALTRE LINGUE:**

inglese

**Ascolto**  
B1

**Lettura**  
B2

**Produzione  
orale**  
B1

**Interazione  
orale**  
B1

**Scrittura**  
B1

## PUBBLICAZIONI

### On the Adoption of Radiomics and Formal Methods for COVID-19 Coronavirus diagnosis

2021 <https://www.mdpi.com/2075-4418/11/2/293>

MDPI Diagnostic Journal. A. Santone, M. P. Belfiore, F. Mercaldo, G. Varriano and L. Brunese

Considering the current pandemic, caused by the spreading of the novel Coronavirus disease, there is the urgent need for methods to quickly and automatically diagnose infection. To assist pathologists and radiologists in the detection of the novel coronavirus, in this paper we propose a two-tiered method, based on formal methods (to the best of authors knowledge never previously introduced in this context), aimed to (i) detect whether the patient lungs are healthy or present a generic pulmonary infection; (ii) in the case of the previous tier, a generic pulmonary disease is detected to identify whether the patient under analysis is affected by the novel Coronavirus disease. The proposed approach relies on the extraction of radiomic features from medical images and on the generation of a formal model that can be automatically checked using the model checking technique. We perform an experimental analysis using a set of computed tomography medical images obtained by the authors, achieving an accuracy of higher than 81% in disease detection.

### Early Diagnosis of Liver Metastases from Colorectal Cancer through CT Radiomics and Formal Methods: A Pilot Study

2022 <https://www.mdpi.com/2077-0383/11/1/31>

MDPI Journal of Clinical Medicine

Liver metastases are a leading cause of cancer-associated deaths in patients affected by colorectal cancer (CRC). The multidisciplinary strategy to treat CRC is more effective when the radiological diagnosis is accurate and early. Despite the evolving technologies in radiological accuracy, the radiological diagnosis of Colorectal Cancer Liver Metastases (CRCLM) is still a key point. The aim of our study was to define a new patient representation different by Artificial Intelligence models, using Formal Methods (FMs), to help clinicians to predict the presence of liver metastasis when still undetectable using the standard protocols. Methods: We retrospectively reviewed from 2013 to 2020 the CT scan of nine patients affected by CRC who would develop liver lesions within 4 months and 8 years. Seven patients developed liver metastases after primary staging before any liver surgery, and two patients were enrolled after R0 liver resection. Twenty-one patients were enrolled as the case control group (CCG). Regions of Interest (ROIs) were identified through manual segmentation on the medical images including only liver parenchyma and eventual benign lesions, avoiding major vessels and biliary ducts. Our predictive model was built based on formally verified radiomic features. Results: The precision of our methods is 100%, scheduling patients as positive only if they will be affected by CRCLM, showing a 93.3% overall accuracy. Recall was 77.8%. Conclusion: FMs can provide an effective early detection of CRCLM before clinical diagnosis only through non-invasive radiomic features even in very heterogeneous and small clinical samples.

### 4° Premio presso congresso Associazione Italiana di Telemedicina ed Informatica Medica (@ITIM)

2021 <https://aitim2014.fbk.eu/>

21° congresso nazionale @ITIM

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*Autorizzo il trattamento dei miei dati personali presenti nel CV ai sensi dell'art. 13 d. lgs. 30 giugno 2003 n. 196 - "Codice in materia di protezione dei dati personali" e dell'art. 13 GDPR 679/16 - "Regolamento europeo sulla protezione dei dati personali".*

Campobasso, 07/02/2022