



**RÉPUBLIQUE  
FRANÇAISE**

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**Augmented Images Classification using  
Machine Learning and Information  
Geometry**

**Institutes :**

CerCo : UMR 5549 Equipe PRESAGE  
ENAC : SINA Equipe OPTIM  
Siemens Healthineers

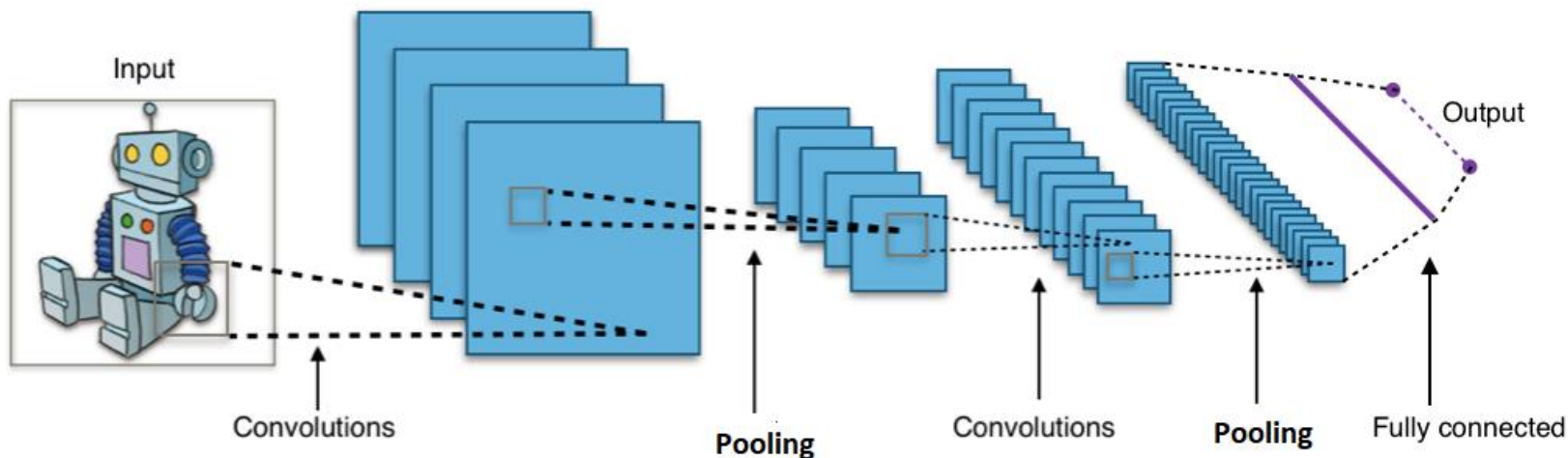
**Supervisors :**

Thesis Supervisor : Mme Berry Isabelle  
Thesis co-director : Mr Maréchal Pierre

**Intitulé de la direction/service**

# Convolutional Neural Network : CNN

## Présentation



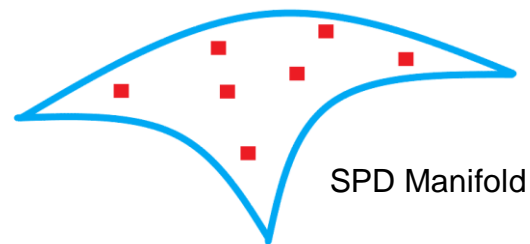
# Augmented Images

## Définition :

$$\begin{bmatrix} A & B & C \\ D & E & F \\ G & H & I \end{bmatrix}$$

A, B, C, D, E, F, G, H, I are Symetric Positive Definite Matrices (SPD)

## Problématique :



~~Convolution and Pooling Layer~~

# Objectives

## Algorithm Implementation :

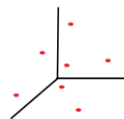
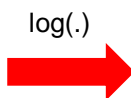


Step 0 : Augmented Images

Step 1 : pre-processing



Manifold SPD



Vector Space

## Applications :

1. Medical : sclerosis
2. Aeronautics : delay in air trafic

Step 2: Convolutional Neural Network



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**Articles :**

It is being written



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