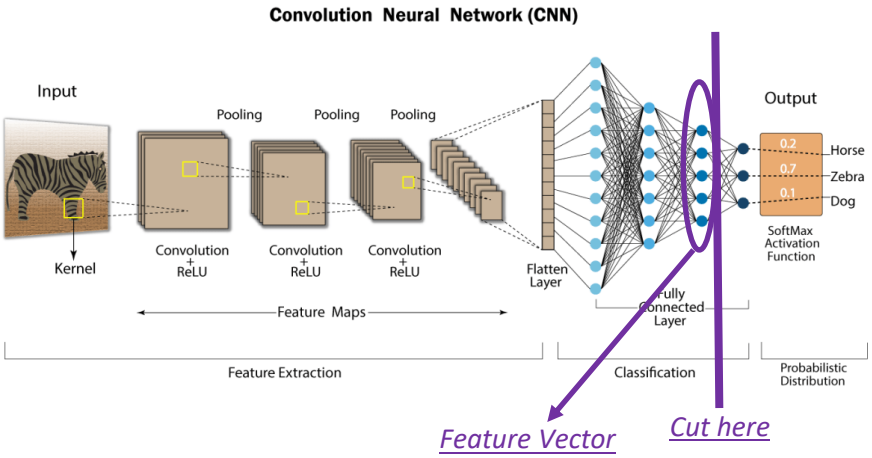
SU Biometrics TP1 – October 30 / 2020

Goal: Get familiar with fingerprint images, image processing and analysis

Task1: Develop a classification CNN for fingerprint images

- Database : "DatabaseClassif"
  - 9 701 images (Beware: images resolution @250dpi)
  - 2000 IDs
  - ➔ Between 1 and 8 images per ID
- Goal: develop a classifier, then create a forward without the last fully-connected layer ➔ keep the result of a forward as a Feature Vector



- Test performance on Task2 databases

Task2: Minutiae and descriptors matching

- Main file: "FingerprintTP_2020.py"
- Databases: "Databases"
  - 4 databases : C, F, H, M
  - 91 images of different fingers (one in each database)
  - Images @500dpi
- Goal: Extract characteristics, match one database versus another, evaluate results
- Main code:
  - Read images in database1 and database2 (each one can be C, F, H or M)
  - Enhance images
  - Extract characteristics (minutiae, descriptors…)
  - Match characteristics
  - Compute FAR/FRR performances

Task3: On TP2: Evaluate on new database; document with results

- Use CNN encoder and evaluate performances on new database
- Use methods developed in Task2 and evaluate performances on new database
- Present results in pdf document with analysis of considered methods, with at least:
    - Detailed method and performance for CNN Feature Vectors
    - 2 detailed points investigated in Task2

Notes:

- Data available on Moodle
- All images are from NIST 301 and 302 databases, available for academic purposes (https://www.nist.gov/itl/iad/image-group/resources/biometric-special-databases-and-software).