Nicolas Loiseau–Witon

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Ph.D. in Computer Science: A.I. *CREATIS Laboratory, FRANCE.*

Education

2019 - present **Ph.D. in Computer Science, A.I.:**
CREATIS Laboratory, Lyon, France.
Title: *"Detection and Description of Keypoints in 3D medical images"*
Thesis Advisors: A. Bartoli, S. Valette, R. Kéchichian.
Ph.D. student in Computer Science working A.I. and more specifically Deep Learning. The goal of the thesis is the extraction and description of keypoints in medical 3D CT-Scan images. The final aim is to register efficiently more than 10000 3D images. The tests are performed on the HPC machine of the CNRS, using GPUs.

2017 - 2019 **MSc in Computer Science,** *Claude Bernard University Lyon 1 la Doua,* France.
Specialization in Artificial Intelligence with the most recent frameworks and hardware technologies.

2013 - 2016 **BSc in Computer Science,** *URCA* Reims, France. with honors.

Professional experiences

2019 - present **Teaching Assistant in A.I. summer school** *CREATIS INSA Lyon 1,* France
Pytorch with Python on different basics learning applications applied for bio-informatics.

Teaching Assistant in engineer school and master's *INSA GE and UCBL Lyon 1,* France
Advanced C++: C++17 with STL implementations and templates meta-programming. Embedded programming in C.

Teaching Assistant in engineer school *INSA Telecom Lyon 1,* France
Computer Science classes: shell, implementation of network algorithms in C, Python and Makefiles.

2019 **Computer Science research internship** *CREATIS Laboratory,* Lyon, France.
Intern in Computer Science for A.I. based on bio-informatics with CT-Scan data. The goal was the extraction of the 3D model of the scapula with the problem of the joint humerus-scapula solved by deep learning.

Skills and interests

Languages **C/C++**, **Python**, **Java**, **Javascript**.
Libraries **Pytorch**, **Tensorflow**, **OpenCV**, **MPI**, **OpenMP**, **CUDA**.
Env **CMake**, **Git**, **Latex**.
Languages **English**: fluent. **French**: native speaker.
Hobbies Kayak/canoe, climbing, swimming, saxophone/guitar.

Research Projects

2017 - 2019 **Different developments projects in various languages and libraries,**
- **AI basis**: A MLP (Multi-Layer Perceptron) with mnist data.
- **Reinforcement learning**: A Pacman which can learn how to win a game by reinforcement.
- **Data mining**: Use different methods to mining data find on kaggle.com.
- **Image Analysis**: A "Rock Paper Scissors" game based on motion capture.

Publications

- **Conference papers, abstracts**.

2021 **Loiseau—Witon, N.**, Kéchichian, R., Valette, S., Bartoli, A., (2021a). "Description de points clés par apprentissage dans des images médicales 3D". In: *ORASIS.*

— (2021b). "Learning 3d medical image patch descriptors with the triplet loss". In: *IPCAI.*

- **Journal papers**.

Loiseau—Witon, N., Kéchichian, R., Valette, S., Bartoli, A., (2021). "Learning 3D medical image keypoint descriptors with the triplet loss". In: *International Journal of Computer Assisted Radiology and Surgery* 17, pp. 141–146.