Julien Denize

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EDUCATION

CEA List, Université Paris-Saclay / INSA Rouen, Normandie Université   *2020 - today*
PhD in Computer Science   *Palaiseau, France*
Thesis: "Self-supervised representation learning and applications for image and video analysis".
Advisor: Professor Romain Hérault.

Télécom SudParis, Institut Polytechnique de Paris   *2017 - 2020*
Master of Engineering in Computer Science   *Evry, France*
Major in Artificial Intelligence.

Preparatory classes, Lycée François-René De Chateaubriand   *2015 - 2017*
Major in Maths and Physics   *Rennes, France*
Preparatory classes for highly competitive exams to enter the French *grandes écoles*.

Baccalauréat Scientifique, Lycée Emile Littré   *2012 - 2015*
Major in Computer Science   *Avranches, France*
Highest honors (*Mention très bien*).

WORK EXPERIENCE

CEA List   *February 2024 - Now*
Machine Learning Engineer   *Palaiseau, France*

- **Technical leader of a MLOps stack** for an R&D department of **80 people**:
  - **Data ingestion, versioning** and **processing** for Computer Vision and NLP.
  - **Distributed training** on SLURM and Kubernetes clusters to enhance scalability and performance.
  - **Model registry via MLFlow** and **testing** to ensure model **reliability**.
  - **Local deployment of models**.
  - **Job orchestration** to optimize resources usage.
- **Developer on multiple projects to scale proof of concepts**:
  - a security system based on **multi-modal** data thanks to **VLMs and LLMs**
  - a platform to **train transformers** and **evaluate and monitor** the performance cost of **quantization** and **modifying the architecture** for on-edge applications.
- **Open-source contributor:**
  - **Torchaug:** efficient batched and on-GPU data augmentations.
  - **Pixano:** multi-modal data exploration and annotation tool **empowered by AI.**
- **Advisor for the computing clusters** to estimate needs **GPUs, CPUs and storage** with limited budget but high-performance needs.
- — **PyTorch, Kubernetes, MLFlow, Transformers, Slurm, Hydra, SQL, TypedScript, CI/CD, GitHub Actions**

CEA List   *December 2020 - December 2023*
Machine Learning PhD Student   *Palaiseau, France*

- **Thesis: Self-supervised representation learning for image and video analysis**
- **Research and Development**:

  - Published new state-of-the-art **deep learning** methods in **international conferences and journals**.
  - Developed open source libraries in PyTorch available on my GitHub:
    – **Eztorch:** efficient **pretraining and fine-tuning of CNNs and Transformers.**
    – **Torchaug:** efficient batched and on-GPU data augmentations.
  - Optimized parallelized code to run distributed deep learning experiments on clusters managed by Slurm and Kubernetes.
  - Participated in the **international action spotting challenge SoccerNet202** and finished 5th out of 12 teams.

- **Teaching:**

  - Designed and taught a course on the basics of deep learning (computer vision, NLP, generative models) for the BDMA Master at CentraleSupélec.
  - Trained my service of around 80 people on how to effectively use the **FactoryIA HPC cluster** to **accelerate deep learning experiments**.

- **Management:**

  - Supervised two six-month internships of MSc students.
  - Member of the living committee to maintain a healthy working environment.

— **PyTorch, TensorFlow, Hydra, Slurm, Kubernetes, CI/CD, GitHub Actions**

CEA List   *March - September 2020*
AI Research Intern   *Palaiseau, France*

- Implemented state-of-the-art **deep learning** methods to perform cross-domain person re-identification.
- Proposed a new state-of-the-art competitive approach using **Generative Adversarial Networks** and **pseudo-labeling**.

— **PyTorch, Slurm**

Continental   *June - September 2019*
Data Scientist Intern   *Regensburg, Germany*

- **Analyzed and visualized manufacturing data** in collaboration with experts from Industry 4.0 factories using AWS (EC2, Kibana, Elastic Search).
- Implemented machine learning algorithms to **detect manufacturing anomalies and predict maintenance**.

— **Keras, Numpy, Scikit-Learn, Pandas, AWS**

Sprint Junior Entreprise   *September 2017 - March 2019*
Technical Expert   *Evry, France*

- **Managed technical projects** from negotiation and hiring to project delivery.
- **Maintained the IT infrastructure** including the website and CRM platform.
- Developed and **deployed an accommodation web platform** for a public institute.

— **HTML5, CSS3, JavaScript, PHP, SQL, Symfony, Docker**

PROJECTS

Eztorch: library for self-supervised training on images and videos *2021 - 2023*
Open-source and available on Github: github.com/juliendenize/eztorch
Developed a Pytorch library for efficient self-supervised learning and finetuning on images and videos.
— **PyTorch, Matplotlib, GitHub Actions**

Torchaug: library for data augmentations *2023*
Open-source and available on PyPi and Github: github.com/juliendenize/torchaug
Developed a Pytorch library to perform efficient GPU and/or batched data augmentations with CI/CD.
— **PyTorch, CI/CD, GitHub Actions**

Action Spotting for Soccer Matches *2023*
Challenge SoccerNet 2023
Finished 5th out of 12 international teams to detect actions with high precision in soccer matches.
— **PyTorch**

Hackathon GPU *2023*
Organized by the IDRIS and NVIDIA
Optimized a library code to perform deep learning and reduced by 50% the training pipeline time.
— **PyTorch**

On Shelf Availability (OSA) Prediction *2020*
In collaboration with the startup Acuity-Data
Analyzed data and implemented machine learning algorithms to predict OSA on 200 hypermarkets.
— **Numpy, Pandas, Matplotlib, Scikit-Learn, TensorFlow**

Job Recommendation Platform *2020*
Project for a class course, Télécom SudParis: https://github.com/juliendenize/Linkedin-IA316-2020
Implemented machine learning agents to recommend jobs in a simulated LinkedIn environment.
— **TensorFlow, Scikit-Learn**

PUBLICATIONS

International Conference Proceedings
- Sandra Kara, Hejer Ammar, **Julien Denize**, et al. In the *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition*, 2024.
- **Julien Denize**, et al. "Similarity Contrastive Estimation for Self-Supervised Soft Contrastive Learning". In the *Proceedings of the IEEE/CVF Winter Conference on Applications*, 2023.

International Journals
- Anthony Cioppa, Silvio Giancola, **Julien Denize**, et al. "SoccerNet 2023 challenges results". In *Sports Engineering*, 2024.
- **Julien Denize**, et al. "Similarity Contrastive Estimation for Image and Video Soft Contrastive Self-Supervised Learning". In *Machine Vision and Applications*, 2023.
- *Adrien Maglot, *Astrid Orcesi, **Julien Denize**, et al. "Individual Locating of Soccer Players from a Single Moving View". In *Sensors*, 2023.

PhD Thesis
- **Julien Denize**. "Self-supervised representation learning and applications to image and video analysis." In *Theses. fr*, 2023.

International Workshops
- **Julien Denize**, et al. "COMEDIAN: Self-Supervised Learning and Knowledge Distillation for Action Spotting using Transformers". In *WACVW*, 2024.

National conferences

- **Julien Denize**, et al. "Estimation Contrastive de la Similarité pour un Apprentissage Flou Auto-Supervisé". In *Conférence sur l'Apprentissage Automatique (CAp)*, 2022.

TALKS

Workshop Franco-Allemand "Computer Vision" *June 2022*
Speaker for the DATAAI institute, Inria Domaine de Voluceau - Rocquencourt
Presented our work "Similarity Contrastive Estimation for Self-Supervised Soft Contrastive Learning".

TECHNICAL SKILLS

Computer Languages	Python, Bash, SQL, Java, JavaScript, C
Deep Learning	Pytorch, Tensorflow, Jax
Machine Learning and Data Analysis	Numpy, Scikit-Learn, Pandas, Matplotlib
MLOps	Git, Slurm, Docker, Kubernetes, MLFlow, AWS
Web	HTML5, CSS3, PHP, Symfony, FastAPI
Systems	Unix, Windows

SOFT SKILLS

Leadership, Project management, Communication, Teamwork, Autonomy.

LANGUAGE PROFICIENCIES

Native French, Full Professional English, Elementary Spanish and German.

INTERESTS

Technologies, Video games, Content creation, Environment and Politics.