Victor Hoffmann

Master's degree in Data Science
Institut Polytechnique de Paris
École des Mines de Nancy

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Seeking for a PhD in Computer Vision

EXPERIENCE

- **Computer Vision Research Intern** *April 2024 - present*
  SONY EUROPE Schlieren, Switzerland

  ◇ Basic algorithm research with event-based vision sensor technology.
  ◇ Development and implementation of computer vision and sensor fusion algorithms on real-time platforms.
  ◇ Implementation of proof-of-concept demonstrators with novel cameras and devices from robotics area.
  ◇ Support establishment of a R&D infrastructure which facilitates teamwork for research & development

- **Deep Learning Research Intern** *June 2023 - August 2023*
  LORIA (Computer Science Research Laboratory) Nancy, France

  ◇ Led the first AI-based extraction of mechanical curves from fiber composites using only microstructure images, making the extraction 500 times faster while maintaining a 1% relative error.
  ◇ Created a multi-task computer vision model, combining Equivariant CNNs & LSTMs.
  ◇ Collaborated with research teams at LEMTA (Physics Research Laboratory).

- **Machine Learning Research Intern** *October 2022 - June 2023*
  INRIA (Computer Science & Mathematics Research Laboratory) Nancy, France

  ◇ Addressed fragmentation challenges. Lowered the prediction error by 63% and improved robustness by 70%.
  ◇ Gathered and preprocessed data (Outlier Management, Gaussian Transformation, Feature Selection, etc.) then stacked fine-tuned regressors (MLP, XGBoost, SVR, ElasticNet). Estimated uncertainty of Neural Network predictions using Bayesian methods (Monte Carlo Dropout).

PUBLICATIONS

- **Deep Learning Approaches for DMA of Viscoelastic Fiber Composites, ArXiV PrePrint** *October 2023*
- **Machine Learning Techniques for Fragmentation Problems, HAL PrePrint (French)** *June 2023*

EDUCATION

- **Master Year 2 Data Science** *2023-present*
  Institut Polytechnique de Paris (École Polytechnique, Télécom Paris, ENSAE & ENSTA) Palaiseau, France

  ◇ Relevant Coursework: Computer Vision (CNNs, ViT, Transfer Learning, Self-Supervised Learning), NLP (Transformers, Pre-Training & Fine-Tuning LLMs), Generative AI (VAEs, GANs, Diffusion Models, Disentanglement), Reinforcement Learning (Q-Learning, DQN, Rainbow), Graphs, Online Learning, Optimization, Causal Inference.

- **MEng / Diplôme d'Ingénieur** *2021-present*
  École des Mines de Nancy, Université de Lorraine Nancy, France

  ◇ Relevant Coursework: Statistics, Machine Learning, Algorithms & Data Structures, Image Processing & Analysis, Monte Carlo Methods, Time Series, Markov Chains, Finite Element Methods, PDEs.

- **Classes Préparatoires aux Grandes Écoles (CPGE)** *2019-2021*
  Lycée Kléber, Université de Strasbourg Strasbourg, France

  ◇ Undergraduated studies to prepare for competitive nationwide entry exams to french engineering schools.
  ◇ Relevant Coursework: Linear Algebra, Calculus, Probabilities, Functional Analysis, Signal Processing.

TECHNICAL SKILLS

- **Programming Languages**: Python, C/C++, SQL, R, MATLAB, VBA
- **Python Libraries**: PyTorch, TensorFlow, NumPy, Scikit-Learn, OpenCV, Pandas, SciPy, Matplotlib, River

LANGUAGES

French: Mother Tongue | **English**: C1 (IELTS 8/9) | **German**: C1 (Goethe Zertifikat 16/20)

Projects / Challenges

- **Personal Projects**

  - *Real-Time Depth Estimation with Monocular Camera.* Applied MiDaS to the depth estimation of a room.
  - *Vehicle Recognition for Smart Cities.* Employed YOLOv8 and ByteTrack models to enhance traffic management.
  - *Real-Time Segmentation for Biomedical Imaging.* Applied FastSAM model to Real-Time MRI Brain Scans.

- **Data Challenges & AI Hackathons**

  - Hi!ckathon 4th edition, Hi! Paris: Won Capgemini's Best Scientific Approach Award.
  - *Real Estate Price Prediction* (Multi-Modal: Images + Tables), ENS Data Challenge, 2022, Rank: 9th/172.
  - *Return Forecasting of Cryptocurrency Clusters*, ENS Data Challenge, 2022, Rank: 11th/51.

Positions of Responsibility

- **President,** Music Club, École des Mines de Nancy   *2022-2023*
  - Created a music room on school site.
  - Supervised over 80 students, coordinated and facilitated the identification of playing partners, rehearsal schedules.
  - Organized 10 concerts among different locations.

- **Treasurer,** Enactus: Carton Solid'air Project   *2021-2022*
  - Improved the project's profitability by 16% by reducing costs and production time.
  - Entrepreneurial project focused on the collection, design, and sale of cardboard items with a strong commitment to sustainability and solidarity.

Hobbies and Interests

- **Music:** Leading a jazz quartet. Advanced piano improvisation. Played 19 concerts across France.
- **Sports:** 5 years of bodybuilding, 7 years of running, 5 years of golf (green card).

Additional Certifications

- **Online Course in Project Management,** École Centrale de Lille, France.   *2021*
- **Introductory Aeronautics Certificate,** Lycée Kléber, Strasbourg.   *2017*