SAYF CHAFIK

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SUMMARY

Master's student in **Robotics, Control & AI** with hands-on experience in **control systems, estimation, sensor fusion, and deep learning**. Currently developing **localization and real-time tracking pipelines** at Hilti for a Precision Laser Tracker, combining **Kalman filtering**, **MATLAB/Simulink** modeling, and **neural perception (SSD MobileNet / OpenVINO)**. Seeking a full-time role in robotics and autonomous systems, available September 2026.

EDUCATION

Sorbonne University Paris, France

- Master's in **Robotics, Control & AI**
- Bachelor's Degree in **Mechanical Engineering** – Intensive Track

PROFESSIONAL EXPERIENCE

Hilti Feb 2026 – Aug 2026

Localization Simulation Intern | Schaan, Liechtenstein

- Designed and tuned an **encoder-based Kalman filter** in **MATLAB/Simulink**, conducting systematic parameter studies and regression testing, achieving improved simulation performance for the localization stack.
- Built and deployed the full **ML pipeline** for an AI-based tracking mode: dataset preparation, **SSD MobileNet** training, and **OpenVINO** export to the embedded **IMX8** platform, complementing the primary IR tracking.

ISIR–CNRS May 2025 – Aug 2025

Research Intern | Paris, France

- Designed and implemented **advanced control strategies (PID, state feedback)** on a haptic system.
- Implemented control for tactile feedback and interaction; worked on **dynamic modeling** and **virtual coupling** relevant to robotic grasping and manipulation stability.

TECHNICAL PROJECTS

Visual Navigation for Mobile Robot *(Python, ROS2, OpenCV)*

- Developed an **autonomous navigation system** for **TurtleBot 3** using **camera and LIDAR** sensors to enable line following, obstacle avoidance, and navigation in complex environments.

Image Attribute Manipulation with Fader Networks *(Python, PyTorch, CNN, Autoencoders)*

- Built a **PyTorch Fader Network** (Lample et al., NIPS 2017) for controllable facial attribute editing (smile, gender, glasses), using **latent adversarial training** to decorrelate attributes from identity and preserve image realism.

TECHNICAL SKILLS

Control: Linear & nonlinear control, Kalman filters (EKF/UKF), Particle Filter, MPC

Navigation: SLAM, Localization and Mapping, Trajectory Planning (exact, heuristic, probabilistic)

Robotics: ROS2, URDF/Xacro, Gazebo, RViz, CAD (SolidWorks)

Deep Learning: Neural Networks, CNN, RNN, Autoencoders, GANs, Transformers, Optimization & Regularization, Model Compression

Programming: Python (OOP), C++, MATLAB, TensorFlow, Keras, Scikit-learn, Pandas, NumPy, Git

Perception: OpenCV (image preprocessing, segmentation, classical features), camera/LiDAR/encoder integration

LANGUAGES & INTERESTS

Soft skills: Initiative, autonomy, team management, problem-solving

Languages: English (C1), French (C2), Arabic (C1), Spanish (B1)

Interests: Robotics, Science, Martial Arts (practitioner and team coach), Piano