

# Steve ZARETTI *R&D Engineer*

✉ [steve@zaretti.be](mailto:steve@zaretti.be) ☎ +32 496 71 84 73

📍 Rue de la descente, 31 - 6061 Charleroi 🗓 10 Nov 1992

🇧🇪 Belgium 🔗 Single 🚗 A, B 🔗 [steve.zaretti.be](http://steve.zaretti.be) 🔄 kossolax



## 👤 PROFILE

Graduated with a **Master's degree in Computer Science**, I currently hold the position of a **R&D Engineer at ACIC**, while also serving as a professor in social promotion, teaching in the evening classes. My passion for programming was ignited during my young age, and I enjoy **refining and sharing my technical skills every day**.

## 📁 PROFESSIONAL EXPERIENCE

### R&D Engineer, ACIC [🔗](#)

Jan 2017 – present

As a software developer specializing in Artificial Intelligence at ACIC by Chapsvision [🔗](#), my main job has been to drive our tech forward, pushing the boundaries of what's possible in AI. I mainly focus on object detection, using Convolutional Neural Networks architectures to achieve the best results. With ACIC, I've been working on various collaborative Research & Development initiatives, including but not limited to:

- **RUDIS (2023 – ongoing)**: Our goal with RUDIS is to create energy-efficient models that reduce energy consumption. To achieve this, we've been exploring the best compromises between different frameworks, models, and devices. We started by optimizing the entire processing pipeline, from **stream acquisition** and image decoding to **GPU throughput**. Our efforts have paid off, as we've managed to **reduce the overall cost of inference by a factor of three**. We've also successfully trained a student model that matches the detection capabilities of its more complex teacher counterpart in a specific scenario, using **distillation loss**. The student model version has 6x fewer parameters, we are now trying to quantize it to reduce even more!

- **ReconnAlssance** [↗](#) (2022 - ongoing): In this project, we've been working on developing a system to detect lost objects in train stations. To achieve this, we've refined our **understanding of crowd movement patterns** by applying advanced calibration techniques and in-depth temporal analysis. We've also developed a method to identify ownership of items using a **stable wedding** algorithm, and to group people together using a **dbscan** algorithm. Additionally, we've created a system to find lost objects by combining bbox overlap information with spatio-temporal data. Our goal is to make this system efficient enough to be embedded **on edge devices**, and we reached TRL-8 [↗](#) on this technology.
- **IRIS** [↗](#) (2019 - 2022): We developed a deep learning approach on thermal images to detect and track small objects (just 20 pixels high). To do this, we created a **bi-spectral model** and a **custom training loss** function. A major part of the IRIS project was adding a sense of time to our software, based on the results of our neural networks. This significantly **improved our MOT tracker**, making our AI-powered PeopleCounting [↗](#) solution work at TRL-9, which is better than the traditional version TRL-8 that were using CV approach. The bi-spectral model and the new tracker also helped our PanoramaDetection [↗](#) system.
- **MobiLearn** [↗](#) (2017 - 2020): We explored how deep learning can improve smart city initiatives. We also developed a system to detect road lanes and curves using traditional computer vision methods. As part of MobiLearn, ACIC built its own dataset from public CCTV footage, focusing on road traffic. The project resulted in ACIC's **first production-ready model and tracker, based on the YOLOv4-tiny** architecture, and introduced our initial exploration of tracking multiple objects. This laid the foundation for the ACIC Traffic solution [↗](#), although some work remains to achieve a high-quality, real-world implementation as we achieved TRL-6.
- **SmartCount** [↗](#) (2016 - 2018): We modeled CCTV field of view and benchmarked Machine-Learning vs Deep-Learning approach to crowd numbering problem. During this project, we found that the ResNet model, which was developed during the project, performed better than traditional pattern matching in real-time scenarios. By the end of the project, we opted for **YOLOv3 with automatized hyperparameters** based on the camera's view and crowd density. The findings and results of this project led to the development of a new ACIC project called **CrowdNumbering** [↗](#) and considered as TRL-9.

#### Teacher, ISIPS & HEPH Condorcet [↗](#)

Sep 2018 - present

In addition to my roles in the tech industry, I have found great reward in **sharing my knowledge** and experience as a Higher Education Instructor. I provide instruction exclusively **during evening hours**, accommodating students who are committed during conventional hours and providing an opportunity for continuous learning. This approach facilitates learning for individuals who are occupied during regular hours and are looking to further their education in the IT sector.

- One of my key offerings is a **comprehensive course in Computer Network** [↗](#), mirroring the curriculum offered by the globally recognized CISCO CCNA certification. This course provides both a theoretical understanding and practical skills in the realm of networking.
- In addition, I conduct a course on **Linux System Administration**, guiding students to become proficient in managing Linux-based systems. This course digs into essential aspects of Linux administration.
- Occasionally, I also give some teach sessions on **Algorithms** [↗](#) and **Object-Oriented Programming** [↗](#). These classes take into core programming concepts and techniques, assisting students in sharpening their understanding the logic behind software development.

#### **Software developer internship, M.H. Consultants** [↗](#)

2015

During my internship, I built a form generator for giving psychological tests. This tool was made using ASP.NET and JavaScript. Some form was dynamic to detect attention issues. I worked on all parts of this project, from discussing the initial needs with the client to carrying out the final tests.

#### **Indie game developer**

2014 – 2017

This was my first big project where I've created a role-playing modification in the game Counter-Strike in SourcePawn. The full project contains more than **100K lines of code** [↗](#), and more than 30K different players [↗](#) were actively playing this mod!

I also took on the role of the main system administrator, hosting online sessions of this mod. My core duties included devising and implementing measures to **mitigate the repercussions of network attacks**, which helped the game kept running smoothly and without interruption.

## ORGANIZATIONS

#### **CSMF, Board Member, CE/CPPT President**

Jun 2019 – present

Beyond my academic and professional commitments, I have been privileged to serve as a **member of the Board of Directors** at a local educational institution, which is notably where I received my education. In this strategic role, I am directly involved in guiding substantial investments and shaping the pedagogical trajectory of the school. As part of the board, we continuously evaluate our academic offerings, invest in impactful projects, and ensure our decisions align with our commitment to providing quality education.

Further expanding on my leadership roles, I preside over both the Works Council (**CE**) and the Committee for Prevention and Protection at Work (**CPPT**). As **the President of these committees**, my mission is to maintain a robust and constructive social dialogue between the employee's delegation and the management committee. Balancing the interests of these groups, I facilitate an open dialogue to ensure a harmonious work environment. By listening, mediating, and promoting consensus, I strive to keep our institution a productive, safe, and satisfying place to work and learn.

## SKILLS


**C** — AINSI, C99 | **C++** — C++03, C++11, boost | **Deep Learning** — YOLOv2-v7, custom loss, custom data augmentation | **Computer Vision** — OpenCV | **Linux** — Debian, CentOS, Docker | **Network & Security** — CCNA, SE-Linux, iptables | **Python** — Python 3.7 | **JavaScript** — TypeScript, Angular


## LANGUAGES


**French**  
Native


**English**  
B2

## PUBLICATIONS


**Introduction to Object-oriented programming**  Feb 2023


**The problem of navigation in games**  Jun 2018


**VMS integration with AI technologies**  Jun 2018

**The Skip-List**  Aug 2016

## EDUCATION

**Master in Computer Sciences, UMONS**  Sep 2015 – Jun 2018

**Bachelor in Computer development, Condorcet**  Sep 2012 – Aug 2015

**Mathematics preparation, Institut Saint-Joseph**  Sep 2011 – Jun 2012

## INTERESTS

Board games

Video Games

New space